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# IRON AGE

AUGUST 30, 1951 VOL. 168 NO. 9

THE IRON AGE
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# DIGEST

## of the week in metalworking

**CMP MUTATION PAINFUL TO STEEL INDUSTRY**

AGE 15 CMP finally shows signs of evolving into a workable pattern. But the process is proving extremely painful o the steel industry and its customers. Steel sales people be- eve there isn't much they can do about restoring normal ustomer relationships before the first quarter of next year.

**A FAIR DEAL ON MACHINE TOOL PRICING**

AGE 29 The machine tool industry feels that at long last it is getting a pretty fair price deal in the latest revision f CPR 30. The revision is far from perfect, still needs ad- stments. But it will help the needed expansion of output. acklogs are still huge and they will not melt overnight.

**K-F SPEEDS OUTPUT WITH MORE AUTOMATION**

AGE 54 The automobile industry is reducing man-hours in production with fuller use of automation. Coupled with aximum press speeds, important savings result. An excellent xample is the press line at Kaiser-Frazer's Willow Run plant hich makes floor pans for Fisher Body Div., General Motors.

**CONTINUOUS CASTING OF $O_2$-FREE COPPER**

AGE 63 Operating experience has been accumulated on the Rossi continuous casting machine in operation at arteret since 1948. It casts rounds up to 8 in. in diam, and slabs p to 26 in. wide. Continuous casting has answered the trade's emands for heavier coils of copper which is oxygen free.

**TEST HARDNESS OF CONSTITUENTS IN STEEL**

AGE 68 Microhardness of ferrite, pearlite and cementite in several commercial steels have been determined with anemann tests. Ferrite in low and medium carbon steel (0.25 n, 0.50 Si) measured 170 Dhn. Pearlite in alloys having 35C, 0.45C and 0.60C measured 310, 320 and 315 Dhn.

**HOMEMADE MOVIES SELLING MACHINE TOOLS**

AGE 72 It doesn't take the advertising budget of an industrial giant to pay for sales movies. Monarch Machine ol Co. produces its own, with a minimum of professional lp. They have found them a highly effective sales aid. uality is excellent, cost reasonable—less than $5,000 for -min film which must have audience appeal, sales punch.

**STEEL GOAL UP, LESS STEEL TO REACH IT**

PAGE 87 Washington now has a new goal for steel ingot production—124,146,000 tons as compared with 118 million, the previous government target. At the same time, NPA has sliced down the steel industry's request for structurals in the fourth quarter. Steel's other steel needs were also cut.

**BETHLEHEM SQUASHES CAR WRECKS TO SIZE**

PAGE 89 Bethlehem Steel Co.'s method of going into the auto graveyard to squash junked cars to a size that will ship more cheaply and with less trouble may turn the key to a vast amount of dormant scrap rusting away in automotive cemeteries. The company invites the scrap trade to take over.

**WAREHOUSE STEEL STOCKS REACH NEW LOWS**

PAGE 91 Steel consumers dependent on warehouses are going to have a much tougher job of procurement in the rest of 1951. Warehouse stocks are reaching alltime lows and may go lower. The trade wants another NPA order to replenish stocks. However, it won't be effective before the first of 1952.

**"NICKEL IS PLENTIFUL ON BLACK MARKET"**

PAGE 93 One sphere of the nickel market smelled slightly sour to Washington investigators last week. Testimony before representatives of three government agencies tended to show that some nickel procurement was being held in the black market alley. The metal has sold for as much as $4.50 per lb.

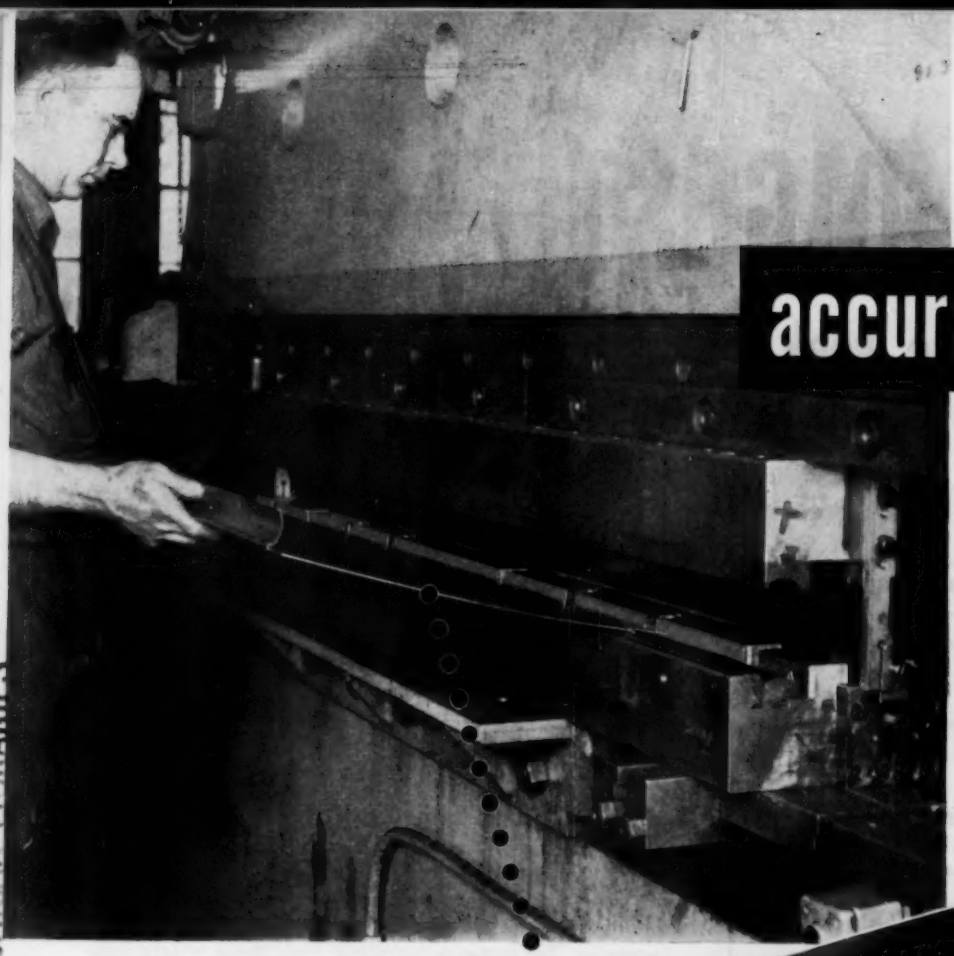
**STEEL MEN STATE THEIR CASE AGAINST CMP**

PAGE 94 A House Small Business Subcommittee will hear more on the effects of CMP on small business when it reconvenes Sept. 12. Steel men testifying before the committee brought up defects of a closed-end CMP for a fractional military effort. One steel rep said it had stirred industrial chaos.

**STRONGER HINGES MADE OF PREFORMED BAR**

NEXT WEEK Those stamping plants producing tens of millions of auto hinges annually are using more preformed bar every year. Processing is shorter and tolerances easier to hold. Up to 100 different hinge designs are produced on the same facilities, by changing the dies and resetting the fixtures.

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# accurate forming

## on a Cincinnati solved this problem

Note the clean, straight lines of the moldings formed on the shelf by this Cincinnati Press Brake.



These outstanding sectional Bulman display shelves fit accurately.
*Photo courtesy E. O. Bulman Mfg. Co., Inc., Grand Rapids 2, Michigan.*

Accurate forming paid off in three ways for Bulman Company, manufacturers of steel display shelves.

Trouble had been experienced in maintaining regularity of product. Now the clean, straight line formed from end to end of the shelving permits a perfect match-up of sections, eliminating a costly trim piece.

Better product, with no discards, and one piece completely eliminated, were the results when this Cincinnati Press Brake was installed . . . it was a profitable investment.

*Write for Catalog B-2A—a Cincinnati Press Brake may improve your product and reduce your costs.*

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IRON AGE

# editorial

## *People Against Themselves*

NOT too long ago one of our leading psychiatrists wrote a book on the theme that a large part of our people commit suicide in one way or another. The only difference was that some took a longer route. The main theme was that people often have a tendency to hurt, harm or even kill themselves by their actions.

Government leaders are supposed to be servants of the people. Congress is supposed to bow to the will of its constituents: We are supposed to know what is good for us—and what is bad for us.

We used to have outstanding leaders and we had respect for these leaders even though we often disagreed with them. Politicians used to try to find out what their constituents thought. Now they promise anything.

Business men used to know their employees. Contact was natural and informal. A good day's work was a goal not a gripe. Now everything is formal with forms, speeches, bulletins and specifications or regulations.

Labor got its union and its union leaders. It got many things it was entitled to. Now the main thing seems to be let's have "another round." The farmer got it in the neck in the 20's so today he is making sure he won't get a repeat.

The silly thing is that *we* are government, business, labor and farmer. Yet we act as if government was something that should direct our lives without too much thought on our part.

We are breeding in this country a contempt for government. People are cynical and suspicious of government and government people. They are suspicious of business often because business has a much tougher job to sell itself to the people as a whole.

This contempt complex allows some in government to hamstring business, aid the social planners, reward the quacks, kick the sincere and bring us that much closer to a showdown on whether we are or are not a democracy.

It looks as if the people are against themselves and there is no psychiatrist with the will and knowledge of God to do anything about it.

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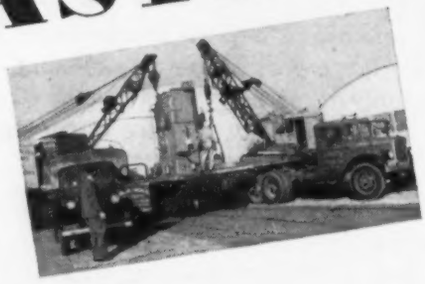

# 25% Step up Over previous methods

From Vol. 12, No. 2 "Ryan Reporter" published by Ryan Aeronautical Company, Lindbergh Field, San Diego 12, California.

BULLARD

## CUT MASTER

**The West's tallest lathe speeds work on jet engine parts for Ryan customers**





A NEW and . . for this Western region . . unprecedented machine tool has come to Ryan. In the language of production engineers, it is the vertical turret lathe with the highest boring mill with raised bed ever installed on the Pacific Coast.

The new machine is an immense (32 tons; 13 feet high) Bullard Cut Master, called "Hi Boy" in deference to 24 extra inches of height for its bed as compared to the standard vertical Bullard. The loftier bed places the 64-inch diameter turning table in the most advantageous position for accomplishing specialized milling on unusually tall parts. Metal sections measuring from one-half inch to just under 7 feet in height are turned with ease.

Constructed in Bullard's plant at Bridgeport, Conn., the Hi Boy was shipped by rail direct to Ryan on a low-bed flat car that was designed for heavy machine tool transport.

Billie B. Lair, service representative for the West Coast Bullard distributor, and Darwin Whetstine, foreman of Ryan's jet assembly department, estimate

← Part of the main factory building wall was dismantled to permit moving the new Bullard "Hi Boy" into the machine shop.

→ Despite its extreme vertical dimension, an external fuel tank mid-section easily fits the 13-foot high lathe for "turning."

### CUT MASTER *continued.*

that, on the basis of first job runs, production on items like the 48-inch aluminum rings for external fuel tanks will be stepped up 25% over previous methods. Similar increased production rates are anticipated on steel cones, aft frames and other jet engine parts.

Emphasizing that a vertical turret lathe is really a conventional turning lathe raised to an upright position, Whetstine adds that he had only to set up a brief training program for his key men to insure skilled operation of the new equipment. Lair also points out that although the Hi Boy is a mighty husky number, its utilization is fatigueless for the operator. One man can run it safely and efficiently, manipulating the lathe's "pendant" (gear control arm) to set off electrical solenoids which in turn hydraulically actuate gear changes to produce desired rotating speeds up to 160 RPM on the fast-whirling table or chuck.

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# IRON AGE *newsfront*

*news methods and product forecast*

► Inventories in the hands of some steel users and jobbers are increasing. The increase is far from general; it is spotty. Causes are government allocation on a historic basis and the natural desire of people to buy things that are generally short. Solution will come when these inventories mount to the point where they cost real money to carry.

Typical are some coal mines which are on a short week. They wear out only half as much steel as they did a year ago but they buy the same amount.

► British sources say that the "Swift," a sweptback wing jet fighter is superior to the Sabre and the MIG-15. Now going into mass production, it may revive the argument on how long a jet engine should last. British design for much shorter life than the U. S.—and use fewer critical alloys.

► A Pittsburgh manufacturer is completely machining a 4140 steel munitions item before heat treatment without suffering any distortion. Property tolerances are also met without difficulty. Secret of success is in the continuous automatic salt baths used.

► It looks like a home-sized model of a soda bottling machine—but it is a high speed automatic device to give ammunition casings a 25,000-psi hydrostatic test. And it runs just about as fast as a bottling machine.

► Where a few months ago their weight was measured in pounds, titanium metal ingots weighing several tons will be poured before this year is over. They'll be suitable for rolling on continuous sheet mills.

► The nickel shortage has forced one alloy steel melt shop to revise its practice so that alloys containing the least nickel are melted at the beginning of the month, the higher nickel alloys toward the end of the month. It smooths out the operation, prevents long shutdowns due to nickel shortages.

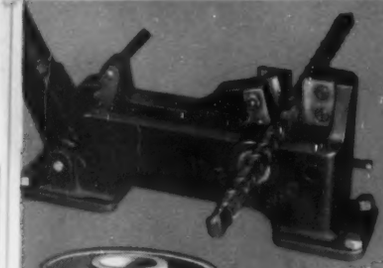
► When permanent-mold casting was applied to a rocket launcher by an industry-Army research team they found a way to make a single cast unit that now takes the place of an assembly requiring more than 70 parts.

► An indication of the iron powder industry's expansion potential can be found in the present production rate and pilot plant activity of one of the major producers. This company now makes iron powder by four different methods, using mill scale, scrap and other materials.

► Allocations of steelmaking scrap may wipe out much reclamation work on slag dumps. Few mills will buy mill scale, etc. Reason is this material would be counted as inventory by Washington. In practice it must be worked in slowly but now it doesn't pay to keep any tonnage on hand.

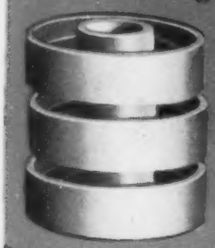
► A French physician reports complaints of severe ear trouble which he has discovered to be caused by slamming doors (and so raising air pressure) on small European cars. Similar complaints are not reported in the U. S.—probably because U. S. cars are so tight that doors can't be shut without opening a window.

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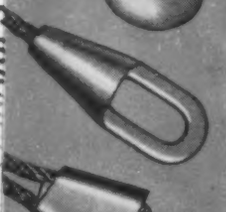


# Versatile? That's FARRELL-CHEEK

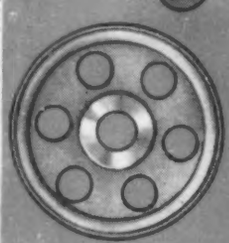




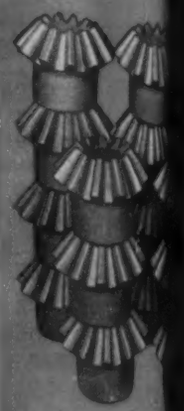




















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Farrell-Cheek parts are made from carefully selected special steels. Farrell's Carbon Steels, Farrell's "85", and Farrell's Hard Edge, have all been developed for specific qualities which will give parts maximum strength and resistance to wear. Hard Edge has an affinity for depth penetration which can be controlled from 1/8" to 1/4" and permits great durability to be combined with fine machining properties. Farrell's "85", made in either carbon, vanadium, copper, nickel, or chrome combinations with manganese-molybdenum, can be hardened and toughened throughout, and provides superb qualities of toughness, rigidity, and wear resistance.

**The fine physical properties of Farrell's cast steels, combined with a wealth of experience in the design and production of a tremendous variety of small to medium castings, makes the Farrell-Cheek name your choice for the procurement of your needs...the one source for the best... with the experience and ability to give you what you want.**

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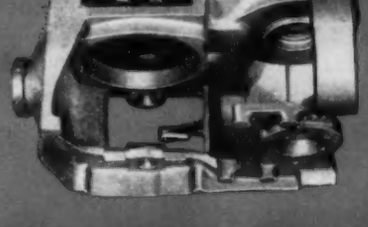
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# IRON AGE *summary*

*iron and steel industry trends*

**CMP changes painful to industry, customers . . . Benefits to come later . . . Fear steel directives . . . Cold-finished bar derby . . . Cancellations.**

**What Price Progress?**—Mutation of the Controlled Materials Plan into a more workable form is proving extremely painful to the steel industry and its customers. Although the recent change in CMP regulations permitting restoration of historic customer relationships should permit vastly smoother steel distribution in the first quarter of 1952, its immediate result is the opposite.

November and December promise confusion compounded. Frustrated steel buyers are flocking back to their regular mill suppliers expecting preferential treatment on their unhonored CMP checks for the fourth quarter. Instead, they are getting promises of help in the first quarter of next year.

**How New Setup Works**—Reason is that National Production Authority did nothing about orders already on the books when it changed the rules. Even if mills were willing to turn their books upside down and alter their production schedules they couldn't legally do so.

By the first quarter steelmakers expect to bring some order out of the chaos. The new setup will work about like this: (1) Direct defense orders come first. (2) Other orders from regular customers up to 90 pct of expected production will be booked. (3) Orders from new customers will be mailed back immediately to give them a chance to scramble for another source of supply. (4) Fifteen days before ordering time expires sales offices will revert to a first-come-first-served basis to allocate the remaining 10 pct of expected output.

**Danger Sign**—This sounds tidy enough. But smooth operation of the whole system still depends on NPA not issuing more tickets for steel production than there are seats in the house. Disappointed ticket holders will turn to Washington for help. If they have a good case they may get a directive to assure them steel. But if these directives get too numerous—they are already mounting—the whole new system will collapse in a pool of blood.

**Changeover**—Mills are busily going over accounts in the formerly "free" steel area. They are booking November and December orders from makers of consumer durables (mostly automotive) against the former free steel tonnage. Customers' CMP tickets will later be used to validate these orders. One mill is giving all free forging bars and hot and cold-rolled sheets for the rest of the year to auto accounts.

**Tightest Item**—Auto output for at least the rest of this year is likely to be dictated less by NPA production restraints than by availability of cold-finished bars. The latter are the subject of what is fast becoming the hottest steel search in the postwar period.

**Ways and Means**—Most significant step being taken is conversion. Automakers without conversion in the works are trying to make trades of various other items that will permit them eventually to wind up with cold-finished bars.

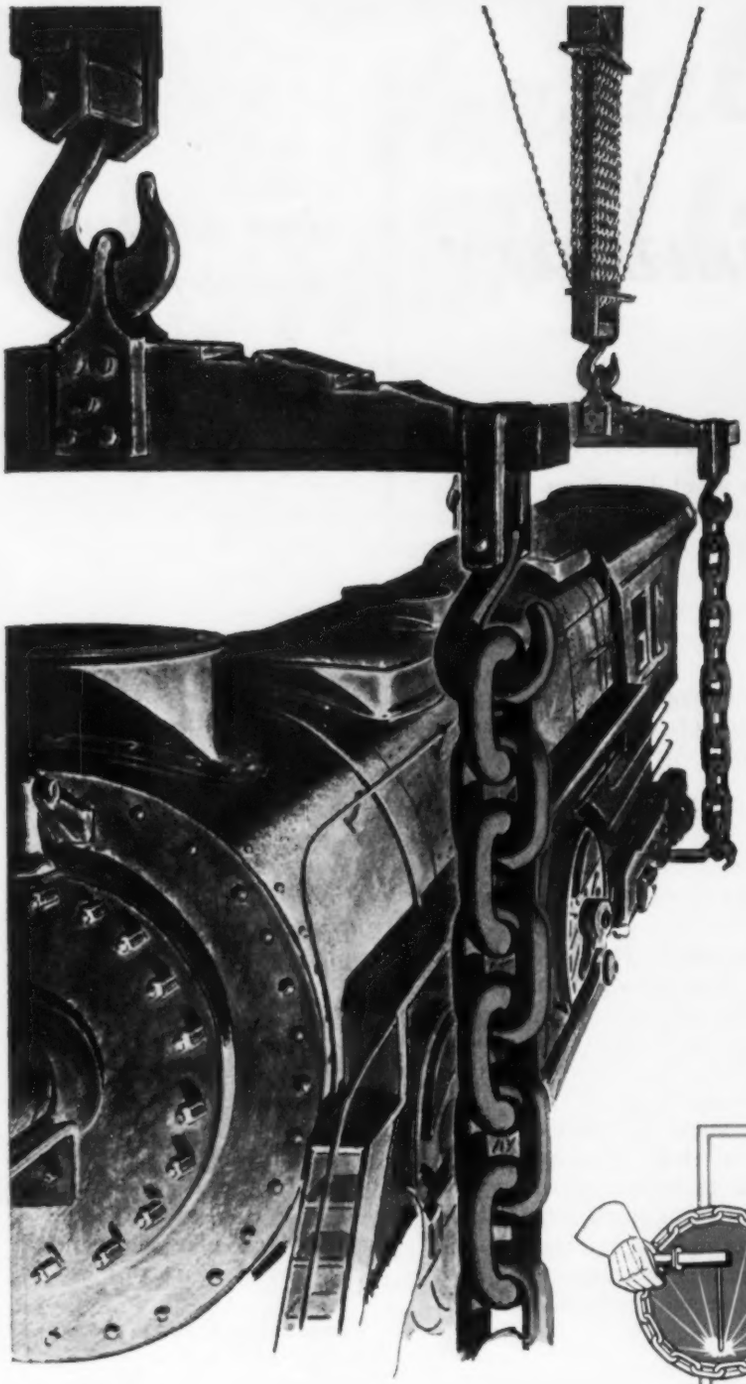
Vendors have another tactic. Some are buying up all steel in sight, regardless of present needs. Hope is that steel on hand can be used to trade for cold-finished steel to avert plant shutdowns in fourth quarter.

**Cancellations**—One mill in the Midwest has had a surprisingly heavy number of cancellations of electrical sheet orders for September delivery. They came largely from manufacturers of fractional horsepower motors going into appliances. Cancellations are believed to result from inventory problems, as well as shortages of nonferrous materials going into the motors.

Some sheared and universal plates formerly going to the free steel area have been ordered held in reserve for the fourth quarter. Some think these may be directed into a landing craft program.

**(Nonferrous summary, p. 112)**

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Weirton's new development can well prove to be a two-edged sword in national defense; it will not only result in tremendous savings of pig tin for military purposes but will at the same time increase the production of tinplate for vital food packing and container industries.

### NEW ELECTROLYTIC TIN COATING DATA SHEET OF WEIRTON STEEL COMPANY

| .25# Basis One Side .50# Basis Reverse Side | In Lieu of .50# Basis Both Sides |
|---|---|
| Average Coating | .375# |
| Metal Savings Per Base Box | .125# |
| Metal Savings—Per Cent | 25.0% |
| Increase in Area | 33.3% |

| .25# Basis One Side 1.00# Basis Reverse Side | In Lieu of 1.25# Basis Both Sides |
|---|---|
| Average Coating | .625# |
| Metal Savings Per Base Box | .625# |
| Metal Savings—Per Cent | 50.0% |
| Increase in Area | 100.0% |

| .50# Basis One Side 1.00# Basis Reverse Side | In Lieu of 1.25# Basis Both Sides |
|---|---|
| Average Coating | .750# |
| Metal Savings Per Base Box | .500# |
| Metal Savings—Per Cent | 40.0% |
| Increase in Area | 66.7% |

| .25# Basis One Side .75# Basis Reverse Side | In Lieu of .75# Basis Both Sides |
|---|---|
| Average Coating | .500# |
| Metal Savings Per Base Box | .250# |
| Metal Savings—Per Cent | 33.3% |
| Increase in Area | 50.0% |

| .375# Basis One Side 1.00# Basis Reverse Side | In Lieu of 1.25# Basis Both Sides |
|---|---|
| Average Coating | .6875# |
| Metal Savings Per Base Box | .5625# |
| Metal Savings—Per Cent | 45.0% |
| Increase in Area | 81.8% |

| .50# Basis One Side .75# Basis Reverse Side | In Lieu of .75# Base Both Sides |
|---|---|
| Average Coating | .625# |
| Metal Savings Per Base Box | .125# |
| Metal Savings—Per Cent | 16.7% |
| Increase in Area | 20.0% |

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# *Dear* EDITOR

*letters from readers*

## Investigitus

Sir:

In the editorial "How Snoopy Can We Get?" in your Aug. 16 issue you mention the symptom of "investigitus." If you will get a copy of Form No. BLS 1847 B Rev. 7-1-50 from the U. S. Dept. of Labor you will see that our administration is interested in your wearing apparel.

We answered questions for over 4 hr in our home on a so-called survey—questions such as "How many panties, briefs or bloomers, whether silk, nylon or cotton, cost and where purchased for the year of 1950." Also razor blades, toothpaste, toilet tissue used, etc., for 47 pages.

Can you tell me what this has to do with the present emergency?

Well, I believe every sincere American who reads your straight-from-the-shoulder editorial will at least go to the polls and protect that privilege which is his.

*F. W. HILL*
*Youngstown*

## Aluminum Expansion

Sir:

I read in your Aug. 2 issue an article "Aluminum—The In's and Out's of Expansion" by Bob Hatschek on the expansion of aluminum and the general problems of expanding pig production. The analysis is good but it unfortunately does not go far enough. The one answer, solving all requirements simply and directly, would be for the federal authorities to pursue the possibility of getting aluminum from Canada.

The Canadians are not giving their utmost to the Kitimat project (scheduled to be partially ready by 1953 or 1954) because they lack assurance of a substantial American market. United States negotiations for this aluminum on a permanent basis would spur the project.

I write as an American "independent" who has long suffered from inconsistent sources of metal here in the States and who has found Aluminum Co. of Canada an ideal supplier. Canada could build up an additional 500,000 metric tons a year of capacity using low cost power unavailable here. Resulting primary capacity would far exceed Canada's needs and assure that Alcan would not compete with fabricators. The prices have been historically competitive despite import tariffs.

Building new aluminum facilities in the United States now requires critical materials needed for the defense effort; it is inflationary at present prices; and it necessitates government subsidy either directly for high cost power or indirectly through accelerated amortization benefits.

It is generally agreed that aluminum production by independents here is economically impossible—several have tried and quit. Therefore, if Alcan is willing to erect Kitimat using its own funds and Canadian materials, we should take advantage of the opportunity to obtain metal from that source.

Such an arrangement would promote better competition between metal suppliers, result in better political and trade relations, create more jobs in this country per dollar invested and per kilowatt-hour consumed, conserve United States natural gas reserves and provide better industrial dispersal from a military viewpoint.

Records show that the "Big Three" consume more than they produce and compete with "independents" in importing material. They cause scrap to flow back to the mills, diverting it from secondary smelters and thence from the "independent." No more productive capacity should go to the "Big Three" at this time. It would be the crime of the aluminum age to permit further concentration of such economic power. It is directly antithetical to everything we hold dear.

It is time the American "independent" was aroused to the sinister conditions surrounding his industry and to lend his support to those who are trying to help him.

*A. TROY*
*President*

*Eastern Metal Products Co.*
*Tuckahoe, N. Y.*

## Exporting Knowledge

Sir:

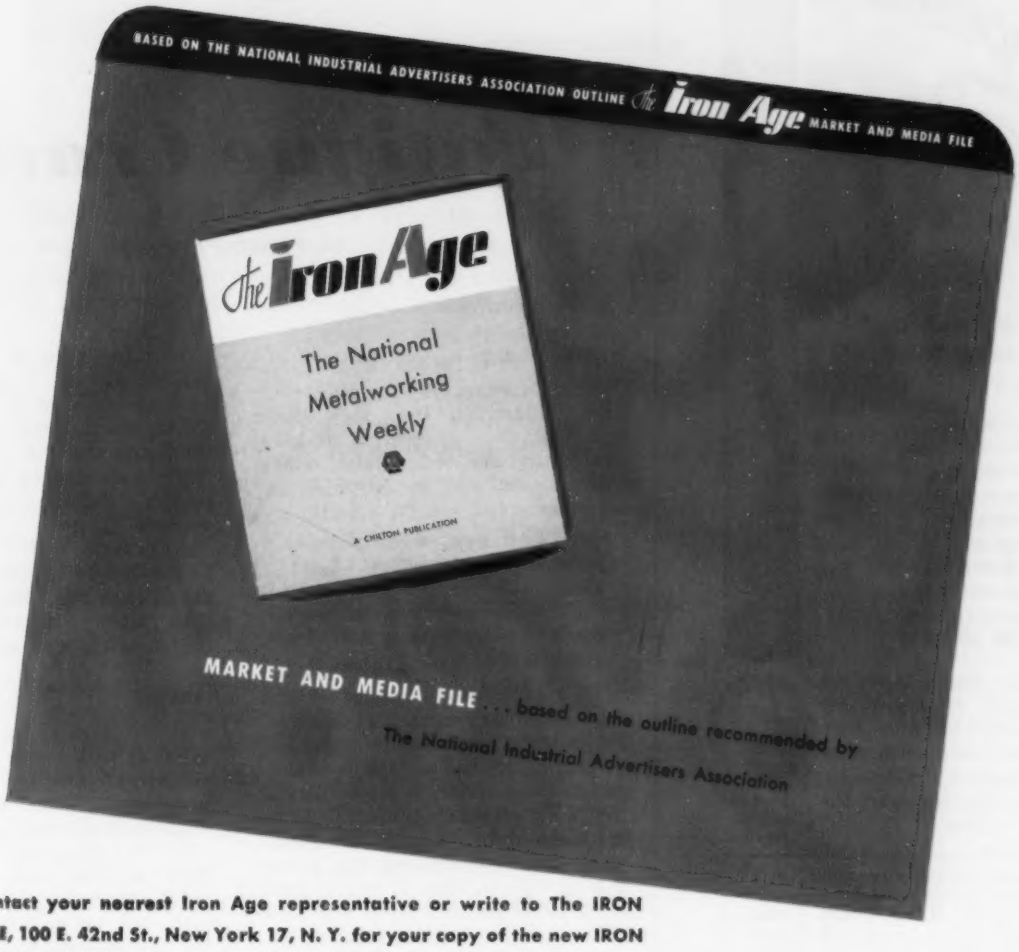
We would very much appreciate your permission to distribute to State Dept. missions in continental Europe, Latin America, the Middle East, the Far East and Africa for translation and possible republication in local periodicals the following articles from your July 26 issue: "Electro-Mechanical Method X Machines, Carbides, Hard Alloys" and "Phosphate Lubricant Aids Cold Extrusion of Steel."

Some condensation of the articles may be necessary because of space limitations in foreign newspapers and magazines.

*R. MOCH*
*Chief—Field Publications Section*

*U. S. Dept. of State*
*New York*

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| 163 | 313 | 600 | 1150 | 1700 |
| 175 | 325 | 650 | 1200 | 1750 |
| 188 | 338 | 700 | 1250 | 1800 |
| 200 | 350 | 750 | 1300 | 1850 |
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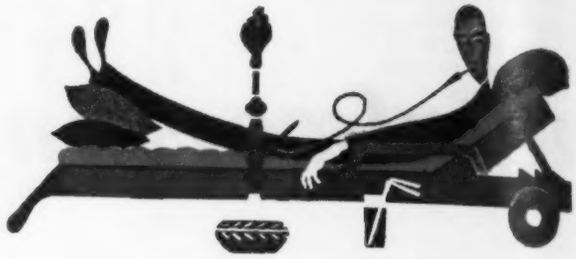
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# Fatigue Cracks

*by Charles T. Post*

## Name, Please?

After visitors to the plants of SKF Industries, Inc., sign their names at the registration desk in the lobby, the receptionist hands them a card with he following inscription:

> *"While you were signing your name (a matter of seconds)* 125 *bearing rings and* 1791 *balls and rollers were made in the plants of SKF Industries, Inc."*

This troubles us greatly. The reputation for accuracy of the bearing industry as a whole, and SKF in particular, has always been second to none. Now, it seems logical that SKF might turn out 125 bearing rings and 1791 balls and rollers while we were signing *our* name. But if this is true, it would turn out only 75 bearing rings and 1200 balls while Joe Doe was signing his. And when Marmaduke K. Peedunkledinger signed, in his halting way, production would soar to at least 250 bearing rings and 3000 balls and rollers.

If SKF is going to go around making loose statements in the lobby, what can we expect of the tolerances on its bearings? They might even say 0.000001 in. when they mean 0.0000011 in.

## Buzz Me, Miss Blue

From the Los Angeles *Industrial News*, we learn that H. D. L'Heureux is receiving congratulations upon completion of 40 years of service with that company. Says the *News*, "Now manager of building utilities . . . L'Heureux joined the company as a beekeeper in the San Francisco office."

This leads to all sorts of conjectures about L'Heureux' past. Did he keep his hives so as to sting his colleagues to greater efforts? Did the honey that his winged workers made sweeten up the petroleum profits? Did the busy ways of the bees set a good example for the San Francisco staff? Or, as your f.f.j.'s Ray Kay unabashedly suggests, does the story prove that a man can be a success in 40 years by "minding his own beesness."

## Puzzlers

H. K. Moore, Boston, has provided us with a new solution to the number problem and R. Hagedorn, Lockheed Aircraft Corp., has the solution to the bottle puzzler.

Several have overlooked the fact that the frogs were out of the well on the last jump and didn't fall back, but not so with F. H. Buckley, Woodstown, N. J.; R. W. Huff, Canton, Ohio; and J. A. Davenport, Cincinnati.

Just because we mentioned that one of the frogs was a technician, Mr. Davenport thinks we should make a project out of the puzzle. Starting with the answer that the frogs came out of the well in the order "C," "B," "A," "D" (Puzzle in Aug. 16 issue) he would like to know:

1. How much faster (even points in percentage) would the last one have had to jump to come out first?
2. If "A" weighed 2 lb, "B" weighed 1 lb, "C" weighed 4 lb and "D" 3 lb, how did they rank in energy used?
3. What was the average rate of frogpower used?

All this because we used the word "technician."

# machine tool high spots

*sales inquiries and production*

*by George Elwers*



**Fair Price Deal**—The machine tool industry feels that at long last it is getting a pretty fair price deal. The latest revision of CPR-30, while far from perfect, apparently will remove much of the cost worries which have accompanied efforts to expand output. Some individual adjustments will no doubt be necessary, but overall, the new price regulation appears to be adequate.

But industry backlogs will not melt overnight. The statement, attributed to a high NPA official, that the new price order will "break the machine tool bottleneck" is just plain silly. There are still materials, components, and manpower shortages. An informed source estimates the industry's 1951 production will hit $600 million, twice the 1950 level, and says an optimistic guess would put 1952 output at Mobilizer Charles Wilson's goal of $1 billion.

**Always First**—The machine tool industry quite naturally is one of the first to feel the full impact of building up of defense productive capacity. Also, naturally, it is one of the first to complete its expansion and settle back into a more normal state of business. Many feel this return to quieter business conditions will begin about 1953 or 1954.

Talk around Detroit is that the auto industry is betting on this guess, and that many of the "19xx" new engine and new body style programs in the works are being quite definitely planned for 1954.

**In Trouble**—In the meantime, some current new engine tooling programs are running into serious trouble. The auto industry and the machine tool industry have done a magnificent job, and despite the mounting competition of defense work many new engine programs have been brought to completion or near completion. But other programs which have been hopefully pushed along are finding the immediate outlook black.

More and more instances are being reported of diversion of standard machines from unrated auto programs to defense projects, and forced indefinite postponement of completion of special machine tools.

**History of Growth**—One hundred and twenty-five years ago a new manufacturing enterprise made the first entry in its ledger: $1.50 for turning 900 chair rods. It has been in continuous operation since that time, and is today one of this country's leading machine tool manufacturers. Records of 125 years of continuous operation are not common in American industry.

Even more remarkable is the fact that The Heald Machine Co. has, through all of these years, always been under the management of the Heald family. Founded by Stephen Heald, the firm was brought into the machine tool business by his grandson, James N. Heald. All four of J. N. Heald's sons, the fourth generation of Healds in the business, went to work for the Heald Co. One has since died; the other three today occupy the top executive positions in the firm.

**Build Bullards?**—With Detroit men Boyer and Bedford in Washington expediting slots, machine tool builders look for increased pressure to have the auto industry build machine tools or at least machine tool parts. One result may be completion of the deal for Fisher Body to build Bullard machines. This project has long been in the discussion stage, but both parties, mindful of the difficulties involved, have been something less than enthusiastic about the idea.

Apparently only firm Washington pressure could put it over. That pressure may now be forthcoming. One insider reports that a pool order has already been prepared for Fisher Body, though at the time of the report it had not yet been accepted.

**Pool Orders**—So far many machine tool firms have been cool to pool orders because of price control uncertainties. Something less than half of all announced pool orders have actually been accepted.

Washington now expects that with a more favorable price order in effect, pool orders will look better to machine tool builders, and contracts for $1 billion in pool orders are now being negotiated.

# Bolting of structural joints cuts construction costs!

If you are interested in substantial savings in erecting your next building, follow the example of one of America's largest housing projects.

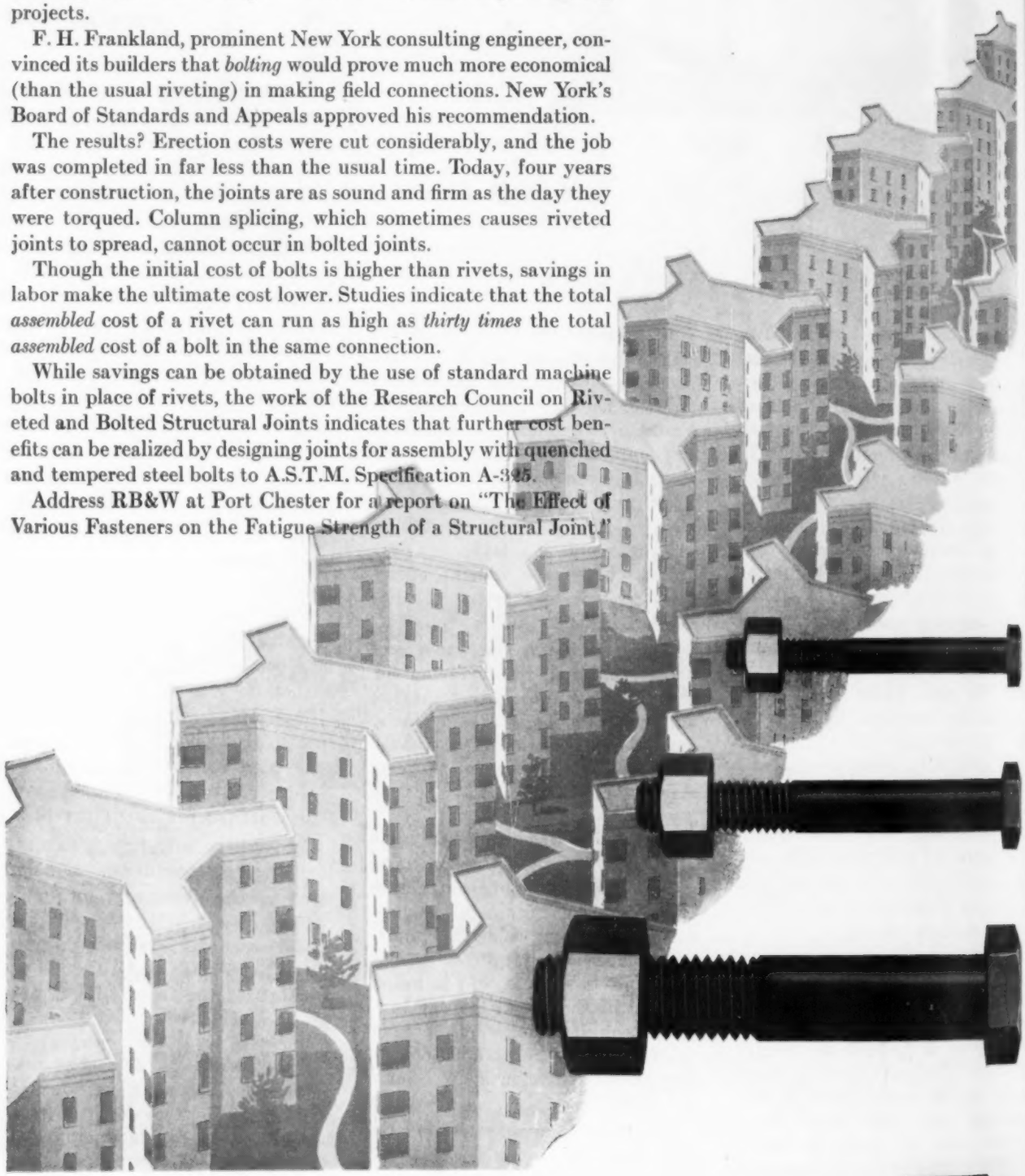
F. H. Frankland, prominent New York consulting engineer, convinced its builders that *bolting* would prove much more economical (than the usual riveting) in making field connections. New York's Board of Standards and Appeals approved his recommendation.

The results? Erection costs were cut considerably, and the job was completed in far less than the usual time. Today, four years after construction, the joints are as sound and firm as the day they were torqued. Column splicing, which sometimes causes riveted joints to spread, cannot occur in bolted joints.

Though the initial cost of bolts is higher than rivets, savings in labor make the ultimate cost lower. Studies indicate that the total *assembled* cost of a rivet can run as high as *thirty times* the total *assembled* cost of a bolt in the same connection.

While savings can be obtained by the use of standard machine bolts in place of rivets, the work of the Research Council on Riveted and Bolted Structural Joints indicates that further cost benefits can be realized by designing joints for assembly with quenched and tempered steel bolts to A.S.T.M. Specification A-325.

Address RB&W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."



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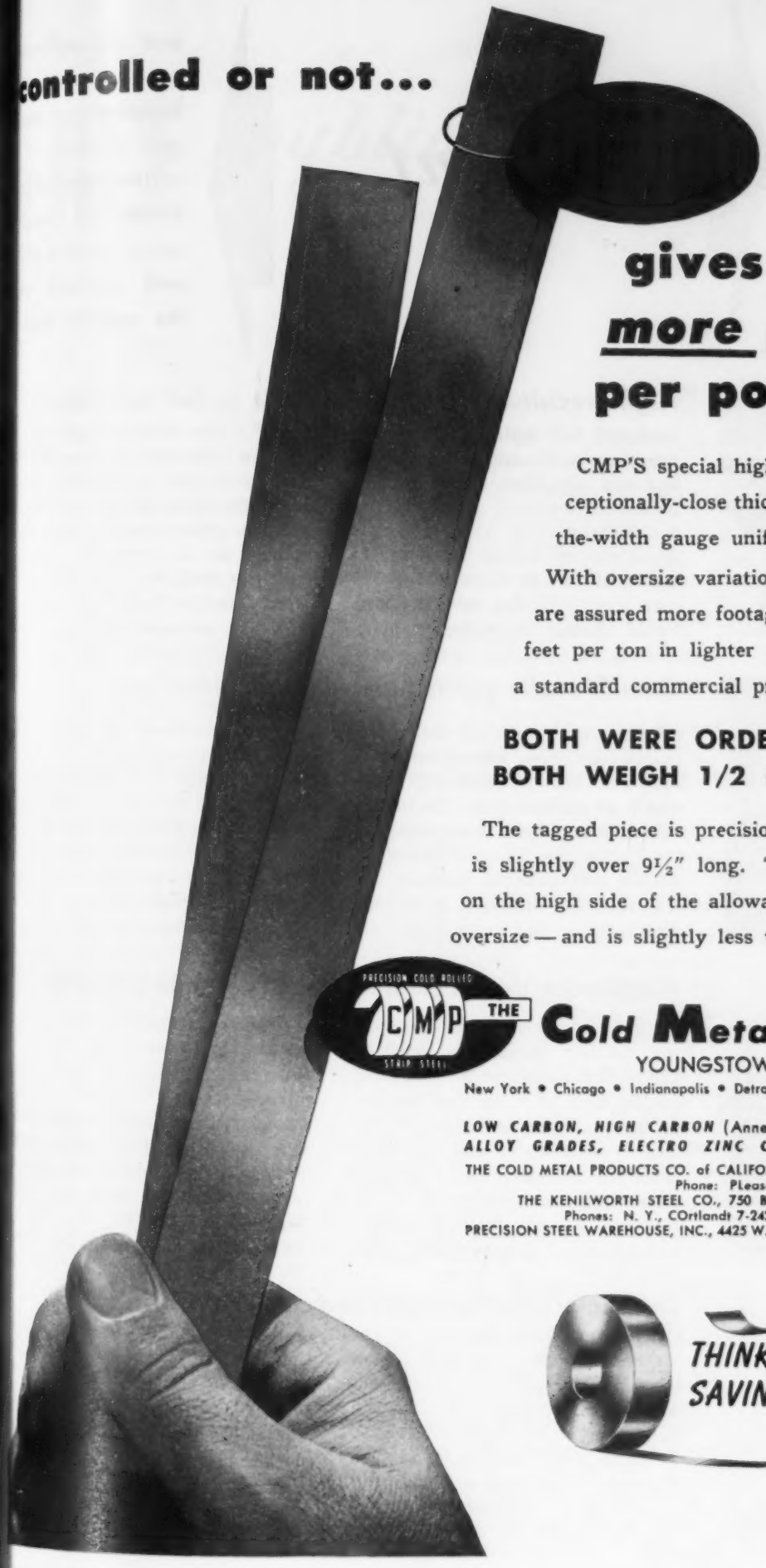
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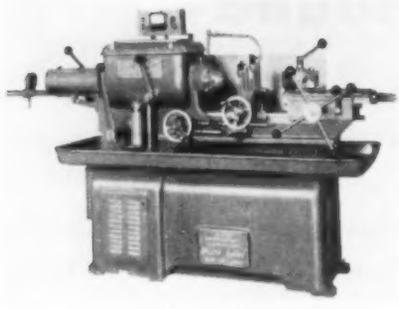
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# NEW *equipment*

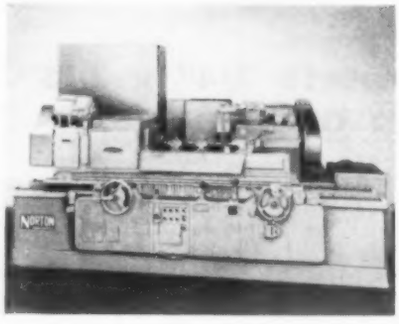
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## *High precision turret lathe has 1¼ in. bar capacity*

Designed for rapid production of precision parts and a variety of bar and chucking operations, an improved, low-cost, high-precision No. 2 turret lathe features remote speed control, helical gears in the headstock, and an electrical tachometer that indicates spindle speed. Speed change is made by push-button. The electrical control permits an infinite range of reversible speeds; it also incorporates overload protection. Micro-Speed drive permits speed changes while the spindle is in operation. Spindle clutch is multiple disk-type. *Simmons Machine Tool Corp.*

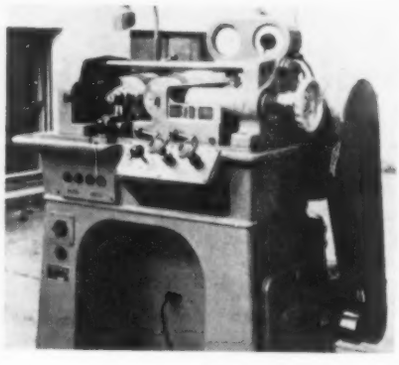
**For more data insert No. 1 on postcard.**



## *Cam-O-Matic grinds tapers in both directions*

Arrangements by which tapers required on some automotive cam contours are automatically produced at normal high production efficiency have been incorporated in the Norton No. 2 Cam-O-Matic hydraulic cam grinding machine. Tapers in either direction, or in both directions on the same shaft, are speedily produced by these new patented arrangements. In addition, provision is made for grinding straight faced cams. With the machine so arranged, means are provided for handling present designs of cams, and for future requirements. *Norton Co.*

**For more data insert No. 2 on postcard.**



## *Machine cold-rolls chipless threads of high precision*

A precision machine for cold-rolling chipless threads is rated at 120 to 1500 pieces per hr depending on the kind of metal and the size of thread. Identified as the Thommen type G-45, it cold-rolls high precision thread with polished flanks and exact profiles in standard and special steels (including molybdenum, chrome-nickel, and stainless), most of the nonferrous metals, and aluminum. It rolls threads with left or right hand pitch, multiple pitch threads, threads within centers, very short threads with collars and conical threads. Thread diameters range from 5/64 to 1 57/64 in. *Carl Hirschmann Co.*

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## *Drill jig eliminates layout and cuts drilling time*

Changes and improvements on the Mathewson drill jig include a new, more positive and more easily adjustable combination stop that can be used on either right or left side. The stop makes it possible to feed all work in the same direction and quickly make changes from drilling cap screws to drilling round or hex stock at any distance from the end. It is only necessary to change the V block when changing to the alternate diameter range. The tool drills holes through round stock and hex stock ¼ to 2 in. *Mathewson Machine Works, Inc.*

**For more data insert No. 4 on postcard.**

***Turn to Page 36***

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**These publications describe money-saving equipment and services... they are free with no obligation... just fill in and mail the postcard.**

## *Drying ovens*

A constant flow of controlled heat to meet many baking and heating requirements are available with *Chal* equipment. Some of these include tin-printing ovens, paint and enamel ovens, vitreous enamelling, core and mold drying, light alloys treatment, and air and space heaters. Separate brochures are available on each. *Controlled Heat & Air, Ltd.*

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## *Hoisting equipment*

Hoists and hoisting equipment are described in a new 12-p. catalog. Heavy duty equipment in a range of sizes is especially designed for contractors and industrial plant operators. Cranes and derricks are equipped to answer a range of materials handling problems. *Clyde Iron Works, Inc.*

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## *Continuous furnaces*

*Incandescent* mattress conveyor furnaces offer simplicity of operation and accurate control of heat. Many industrial furnaces are described in Section Two of *Industrial Furnaces and Equipment*. These include furnaces for cartridge case annealing; rotary annular hearth furnaces; bright annealing; light alloy billet heating; bar and tube furnaces; indirect heating for brazing, normalizing and other operations. Brochures are available on each furnace. *The Incandescent Heat Co., Ltd.*

**For free copy insert No. 24 on postcard.**

## *Threaded bars*

A new leaflet *Ryerson Threaded Bar Service* gives data on size, lengths, kind of threads, bending, and types and finishes of threaded steel bars. Also illustrated are accessories, including turnbuckles, nuts, washers and tank lugs. *Joseph T. Ryerson & Son, Inc.*

**For free copy insert No. 25 on postcard.**

## *Heat treat apparatus*

Heaters, torches, forges, tool furnaces, blowers, valves and other such heat-treating equipment is described in a new 4-p. bulletin. Further information is offered in this publication on each of the 22 products described. *Diamond Iron Works, Inc.*

**For free copy insert No. 26 on postcard.**

***Turn to Page 104***

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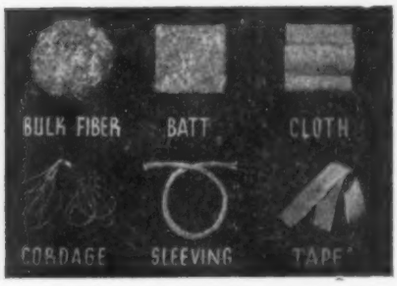
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# new equipment

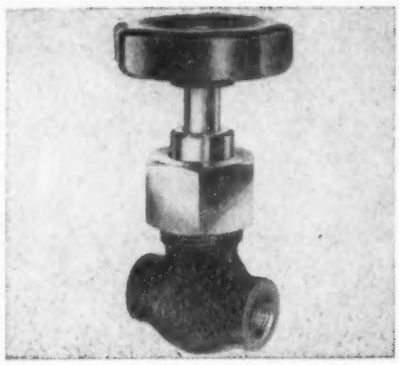
**Continued**




## High temperature sleeving, insulation for wide use

A fibrous silica insulation, Refrasil, provides maximum insulation up to 1800°F with less than one half the weight and bulk of comparable materials, it is reported. Refrasil was originally developed in batt form for installation in jet aircraft to protect personnel and the structure of the aircraft against high temperatures. A new use is that of sleeving as electric space separators in thermocouple leads. Sleeving is available in various sizes and lengths; slip-on installation is easy. *H. I. Thompson Co.*

**For more data insert No. 5 on postcard.**



## High pressure valve permits controlled flow

Tested hydraulically to 9000 psi a small Klinger high pressure valve with 3/16 in. bore is suitable for oil working pressures to 5000 psi and for use with superheated steam to 2000 psi. Added life and strength is achieved by having the diameter of the spindle larger than that of the piston, so that the load exerted on the thread when operating the valve is very small. The body is steel drop forging with flats 1 in. apart. Piston is stainless steel, 5 mm diam, and the bonnet is carbon steel. When, after long service, wear takes place, resulting leakages can be corrected immediately by tightening the bonnet nut. The valve is threaded for ¼ or ⅜ in. B.S.P. or A.P.I. *Richard Klinger Ltd.*

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**NEW YORK 17, N. Y.**

## Tweezers for bearings

Handling instrument ball bearings during inspection, cleaning and re-lubrication operations is simplified by using special tweezers, made for use on bearings having bores 3/32 to ½ in. They can be furnished in two models—one for gripping the bearing by the inside race and the other for the outer race. They help avoid the corrosive effects of finger handling of bearings. *Baker Co.*

**For more data insert No. 7 on postcard.**

## Roller chain vise

Disassembling, repairing or connecting roller chain is simplified by the use of a new Baldwin-Rex chain vise. The vise makes it possible to take apart single or multiple strand roller chain in a few minutes with ease. It is made of forged steel for long wear, with hardened jaws shaped for adapting to various chain sizes. Approximate adjustments are made before the chain is inserted, permitting rapid clamping. *Baldwin-Duckworth Div. Chain Belt Co.*

**For more data insert No. 8 on postcard.**

*Turn to Page 38*

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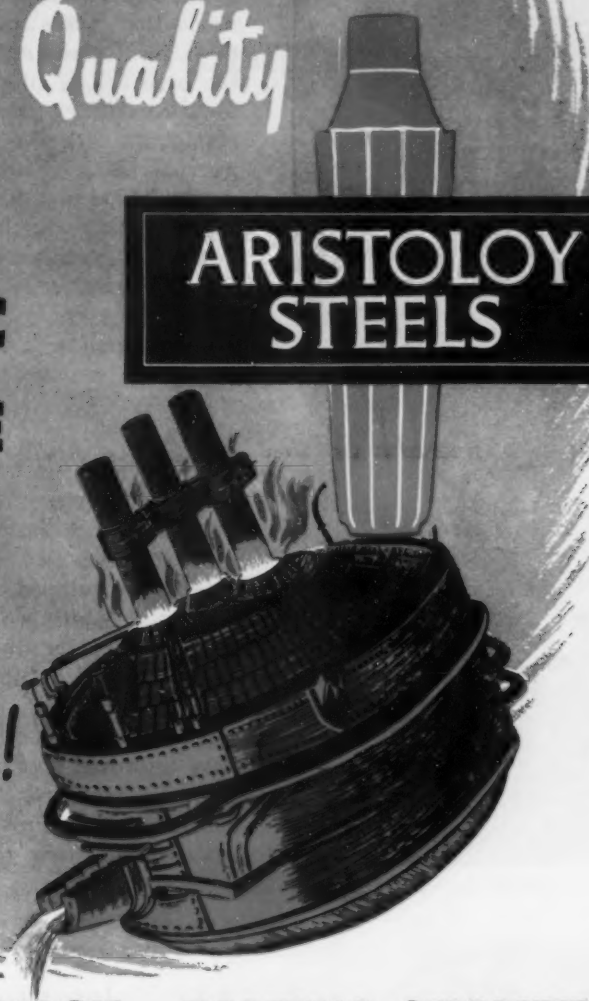
# The Symbol of Quality

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# ELECTRIC FURNACE STEELS

ARISTOLOY STEELS

*It's Better To Use The Best!*



**STANDARD STRUCTURAL ALLOY • BEARING QUALITY**

**ALLOY TOOL • SPECIALTY • NITRALLOY • CARBON TOOL • MAGNAFLUX-AIRCRAFT QUALITY**

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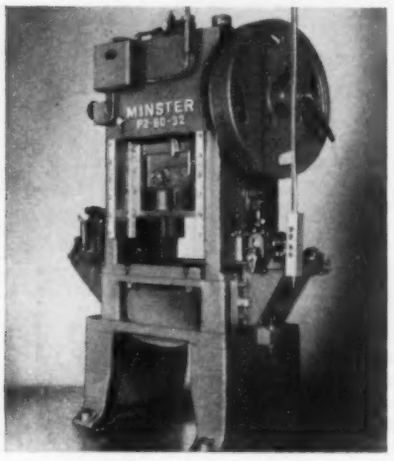
3104 Smith Tower, Seattle, Washington

Monadnock Building, San Francisco 5, California

SCRAP IS VITAL

# *new equipment*

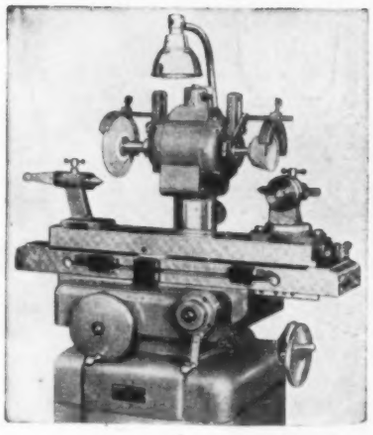
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## *New automatic press produces intricate stampings*

The Piece-Maker, a new automatic production press is designed to meet rigid press requirements for the accuracy of alignment needed to successfully produce intricate stampings with the finest of progressive dies. Features include: flywheel type combination air-operated friction clutch and brake; pendent, pedestal or press mounted clutch controls; four extra long gibs with eight guiding surfaces controlling slide in two directions; adjustable bronze ways on each corner of slide; long sleeve type manually - operated slide adjustment; four-piece tie rod construction; feed and auxiliary equipment to meet production needs. The Piece-Maker has a double throw full eccentric shaft, is offered in the flywheel type and in a capacity range from 20 to 150 tons. All P Series presses are offered with variable speed drives having speed ranges to fit the size and use of the press. *Minster Machine Co.*

**For more data insert No. 9 on postcard, p. 2**



## *Four tool and cutter grinders have greater capacities*

The B800 Series grinder includes four models: A basic tool and cutter grinder; a universal tool grinder equipped with slide mounted multiple speed head, capable of performing internal and external grinding operations; chip breaker grinder; and universal carbide tool grinder. The grinders have improved accuracy standards, greater capacities, 25 pct heavier construction, improved lubrication system, and many refinements for easy operation. New engineering features simplify and minimize set-up time for almost every operation. Specifications include: 8¼-in. swing over table; distance between centers of head and tail stocks 18¾ in.; table working surface 5¼ x 25¼ in.; table traverse 11¾ in.; fast feed, 3¾ ipr of crank. Wheel head swivels 360°. *K. O. Lee Co.*

**For more data insert No. 10 on postcard, p. 1**



## *Pressure control in Marform deep drawing*

A simplified pressure control mechanism for use with Marform equipment consists of a flexible strip cam which is readily adjustable by turning the friction locking adjustment knobs. The developed profile on the strip cam determines the magnitude of the rubber pad forming pressure as utilized by the Marform process. Setting of the three sliding indicators determines the upper and lower limits of the draw depth, as well as the point at which intense forming pressure is built up for setting radii, shearing, etc. Operator places a blank in the machine, pushes a single button, and then removes the drawn part which is automatically stripped from the punch. *Marform Div. Loewy Construction Co., Inc.*

**For more data insert No. 11 on postcard, p. 1**



## *Lift carriage converts for multi-purpose handling*

In less than a minute, a 2000 to 4000-lb capacity fork truck with a new 4-purpose carriage can be converted from fork-spacer and clamp to side shifter. No tools required. The conversion is made by quickly changing one pin and block. Lateral movement of the forks in each case is operator-controlled. Action is hydraulic, with roller conveyor chain linkage. Available in 36, 42 and 48-in. outside fork spread, it provides 17-in. spacer and clamp action; 4¼ in. lateral movement. *Baker-Raulang Co.*

**For more data insert No. 12 on postcard, p. 1**

***Turn to Page 107***



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# *Stainless must go a long way, too!*



To meet the demands of national defense and civilian needs, stainless must go a long way. That's why, now, more than ever—if you use stainless—use it wisely and efficiently.

*Stainless* is a name given to a broad list of grades and finishes—therefore, careful selection of the best available materials for your job is of prime importance. Here Crucible, a pioneer in the development of stainless steels, can help you get the most out of your share of stainless stocks through the unparalleled experience of our metallurgists and stainless fabricating specialists.

And when you can't get the grade of stainless you need, Crucible technical personnel can give you sound advice on the best available materials.

Until the time when stainless is more freely available . . . stretch your supplies of stainless. To do this . . . make use of Crucible's wealth of stainless steel experience.

**CRUCIBLE** first name in special purpose steels

51 *years of* *Fine* *steelmaking*

**STAINLESS STEELS**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

# IRON AGE *introduces*

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**Dorsey H. Rowe,** appointed advertising manager, CLEVELAND WORM & GEAR CO., and its affiliate, FARVAL CORP., Cleveland.

**Robert S. Bubb,** joined AMERICAN BRAKE SHOE CO., New York, as marketing engineer.

**John B. Hazle,** promoted to general works manager, INTERLAKE IRON CORP., Cleveland. **Lindsay Johnson** succeeds Mr. Hazle as general superintendent at Toledo. **B. H. Carmichael** transfers to Toledo to become assistant general superintendent and blast furnace superintendent of that plant. **Burnett Minier** was promoted to assistant general superintendent and coke oven superintendent at Erie.

**Howard A. Davis,** appointed Eastern regional manager of the RIGIDIZED METALS CORP., Buffalo.

**Joseph Kroll,** appointed manager of the experimental division of KAISER-FRAZER CORP., Willow Run, Mich.

**Harry Oldham,** named consultant for the foundries of HUNT-SPILLER MFG. CORP., Boston. Succeeding Mr. Oldham as superintendent of foundries is **William E. Mulcahy.**

**E. L. Kirkwood,** promoted as public relations administrator of the CLEVELAND-CLIFFS IRON CO., Cleveland. Others promoted: **J. D. Condon,** assistant to office manager; **R H. Sheppard,** assistant purchasing agent, along with **G. C. Knight.**

**Fowler McCormick,** appointed a regular member of the executive committee of the board of INTERNATIONAL HARVESTER CO., Chicago.

**A. F. Zamis,** appointed chief engineer of ILLINOIS TOOL WORKS, Chicago. Mr. Zamis will be in charge of engineering, design and development work.

**Walter Most,** named assistant to the production superintendent of division II of OLIVER IRON & STEEL CORP., Pittsburgh. **Mike Wesner** and **James McCrossin** were appointed turn foremen of the cold bolt department.

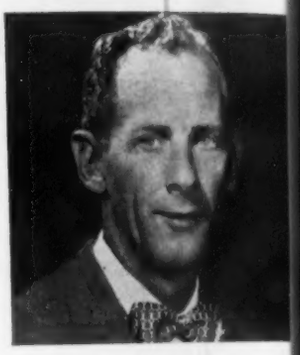
**Carl J. Gross,** named general manager of a midwestern department, Federated Metals Div., AMERICAN SMELTING & REFINING CO. **Allan Nichamin** has been appointed manager of the Detroit plant to succeed **Robert Ruch** who has resigned. **John W. Kelin,** appointed midwestern sales manager, and **George M. Baumann** was appointed assistant general manager and purchasing agent of the midwestern department.

**Dr. Harry G. Mitchell,** on indefinite leave from the SPEER CARBON CO., St. Mary's, Pa. and its subsidiaries. Dr. Mitchell's advertising duties will be filled during his absence by **Ives Harvey.**

**C. R. Irvine,** appointed assistant division manager and chief engineer, Convair Guided Missile Div., CONSOLIDATED VULTEE AIRCRAFT CORP., San Diego, Calif. **Harold W. Pope** was appointed as assistant chief engineer of the division.

**Robert D. Horner,** elected secretary of the GLIDDEN CO., Cleveland. **John A. Peters** has been elected a vice-president. **Clifton M. Kolb,** senior vice-president and secretary of the company has retired.

*Turn to Page 52*



WILLIAM A. SPENCE, appointed general manager of Ohio Hoist & Mfg. Co., Cleveland.



F. H. FREY, promoted to manager of roll sales, Pittsburgh Rolls Div., Blaw-Knox Co.



JOHN STAPLER, appointed manager, metal lath plant of National Gypsum Co., Niles, Ohio.

# IRON AGE

# *salutes*



*A. Harold Frauenthal*

IT's an old American custom to make what you need when you can't find what you want to do the job you want to do. Call it inventiveness, ingenuity or what you will, it's pushed this country far long the industrial highway.

A. Harold Frauenthal, Chairman of Kaydon Engineering Co. had a job to do back in 1941. He had the job of building large gun mount bearings for the Navy. To do the job he needed a special grinder. He couldn't buy the kind he needed so he built it.

That grinder could handle work up to 144 in. in diameter and was used by bearing makers and gun mount builders. When Korea became more than another name on a map, arms makers began to clamor for Frauenthal grinders. A new company, A. Harold Frauenthal, Inc., was organized to make them.

This engineer and metallurgist has been knocking on the patent office door regularly since 1919. In 1943 he pioneered the technique of deep flame hardening of bearing races.

Folks at Kaydon hesitate to say a job "can't" be done lest the boss sit down and show them how, step by step. He's made a business of finding new and better ways of doing jobs. He has a genius for doing things differently.

People like this man. They have confidence in him. Kaydon has the unusual record of never having lost an hour due to labor trouble.

Speed boating, deep sea fishing for "the largest one ever caught" and growing unusual flowers are his hobbies.

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EUGENE C. KENNEDY, appointed superintendent of the Gary Works, U. S. Steel Co.



LINWOOD L. ADAMS, appointed manager, transportation planning, U. S. Steel Co., Pittsburgh.



DR. R. C. MACHLER, appointed director of research and member of the executive committee, Leeds & Northrup Co., Philadelphia.



PAUL F. SCHRECK, named vice-president in charge of sales, Moto-Truc Co., Cleveland.

# IRON AGE *introduces*

***Continued***

**George T. Jones,** appointed metallurgical engineer, railroad materials and forgings, U. S. STEEL CO., Pittsburgh. **Carl W. Tuttle,** becomes assistant metallurgical engineer and **James R. Hamilton** replaces Mr. Tuttle as senior service metallurgist in Chicago. **R. W. Steigerwalt** was appointed metallurgical advisor.

**Austin L. Hawk,** appointed assistant manager, Western sales district, Manhattan Rubber Div., RAYBESTOS-MANHATTAN, INC., and will be located in Chicago. **S. V. V. Hoffman** was made regional manager of the West coast sales division for Southern California.

**Norman R. Miller** and **Littleton Strong,** named project engineer and research engineer respectively for BOWSER TECHNICAL REFRIGERATION, Terryville, Conn.

**Kenneth T. Rudd,** elected treasurer of LINK-BELT SPEEDER CORP., Cedar Rapids, Mich.

**H. Stanley Bimpson,** named to the office of the director of engineering of ALLIS-CHALMERS MFG. CO., Milwaukee, general machinery division as consulting engineer.

**Ray McCaffrey,** named assistant general traffic manager for U. S. PIPE & FOUNDRY CO., at Birmingham. **James Flemming** has been made Southern traffic manager.

**Cecil Harvey,** joined the headquarters sales staff of the motor division of ELLIOTT CO., at Ridgway, Pa.

**Boyd Draper,** named superintendent in charge of production of LUSCOMBE AIRPLANE CORP., Dallas.

**F. C. Stouffer,** named assistant superintendent of overhaul production at Dallas for TEXAS ENGINEERING & MFG. CO., INC.

**Leo P. Manske,** elected president of the SYNCRO MACHINE CO., Perth Amboy, N. J. **George L. Morris** has been elected general vice-president.

**George C. Mercer,** appointed director of purchasing for P. R. MALLORY & CO., Indianapolis. **W. J. Topmiller, Jr.,** moves up to the post of purchasing agent.

**David Crawford Hall,** elected pre dent of the DIAMOND MFG. C Wyoming, Pa.

**V. E. Flaherty,** appointed techni superintendent, Trentwood roll mill, for the KAISER STEEL COR **W. J. Lawler** succeeded Mr. Flah as chief metallurgist.

**G. F. Vietor, Jr.,** appointed a d trict manager of AIR REDUCTI MAGNOLIA CO., with headquart at Houston.

**Kyle L. Menuez,** appointed gene manager, rubber products divisi BALL BROS. CO., Muncie, Ind.

**Herman Keisler,** in charge of newly opened office in Seattle, LURIA BROS. & CO.

**Carl McFarlin,** named president the newly formed TENN-TEX A LOY & CHEMICAL CORP., of Hou ton. Other officers elected: L. A. Mill vice-president; **Carl McFarlin,** J vice-president; **John W. Campbe** secretary-treasurer; and L. A. Juen **ling,** assistant secretary. The office also make up the corporation's boa of directors.

**Harold Stone,** appointed manag of the St. Louis office and sales terr tory for QUINCY COMPRESSO CO.

## OBITUARIES

**Fred B. Cutter,** 79, consulting eng neer and former president of S. Cutter Co., at Newton, Mass.

**William H. Nichols,** founder an president of W. H. Nichols Co., pro inent industrialist and inventor, di at 78 at his home in Waltham, Mas

**William A. Coryea,** 58, a proje manager of the Rust Engineering Co at his home in Mt. Lebanon, Pa.

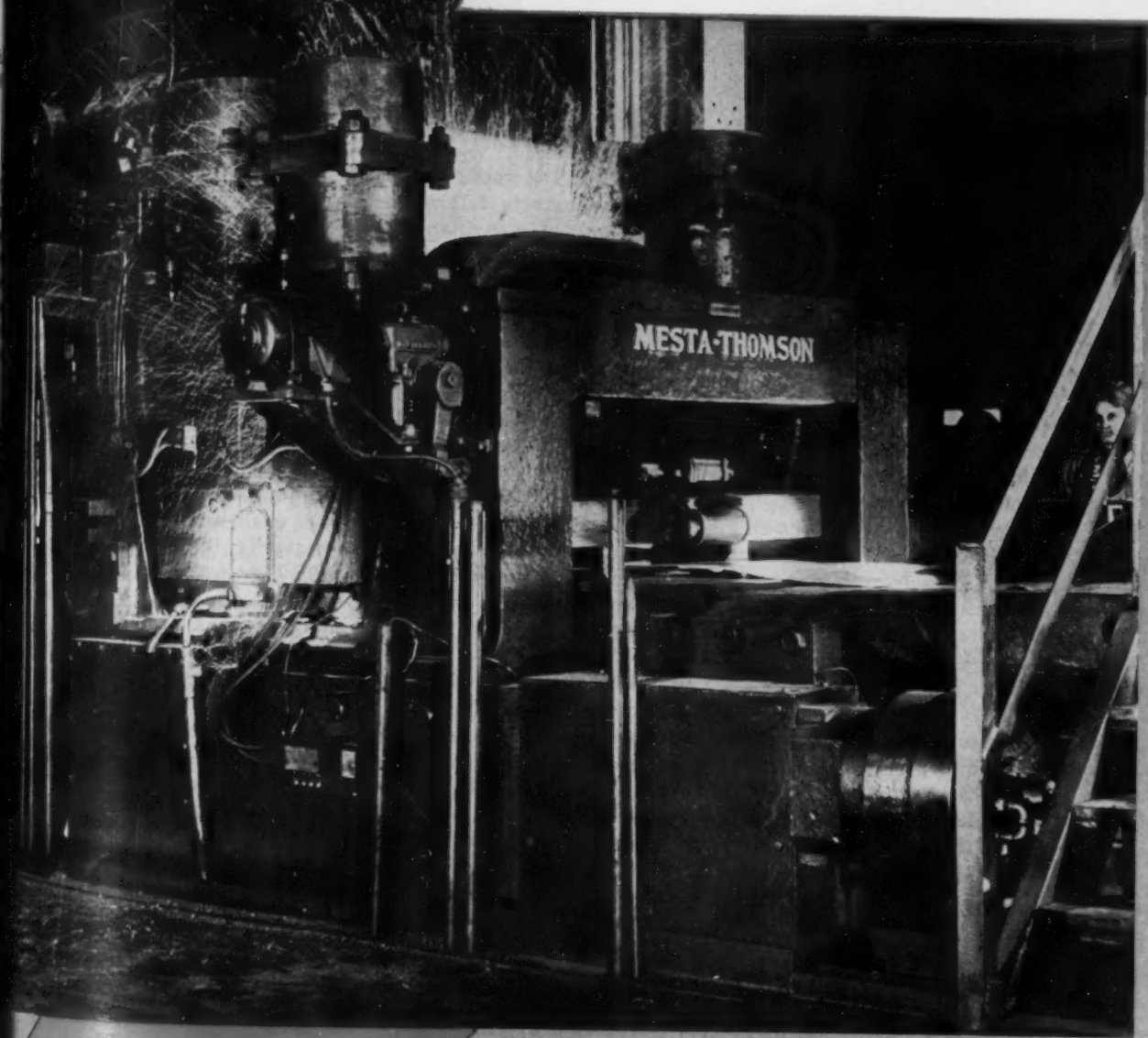
**Clark M. Groninger,** 56, coal traf manager of the Baltimore & Ohi Railroad, at Norfolk, Va.

**Donald F. North,** long-time explo sives sales and service man for Herc les Powder Co., Pittsburgh.

**C. S. J. Trench,** editor and publisher of American Metal Market, at hi home in Staten Island. Mr. Trench ha been active in the tin trade and metal industry for 50 years.

# Increase
## Cold Mill Production with . . .

# MESTA-THOMSON FLASH WELDERS




Mesta-Thomson Flash Welder installed in a Mesta High-Speed Continuous Pickling Line

## MESTA MACHINE COMPANY
**PITTSBURGH, PA.**

Designers and Builders of Complete Steel Plants

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# *on the assembly line*

*automotive news and opinions*

**Press automation increasing . . . Continental shows new "Packette" engine . . . GMC introduces new Diesel line.**



*by Walter G. Patton*

**More Automation**—During the postwar period the automobile industry has learned a great deal about reducing man-hours. This desirable result is accomplished in the press shop largely through automation. Coupled with maximum press speeds, important production savings have been realized.

An excellent example is the press line at Kaiser-Frazer in which automatic handling equipment has been installed to make possible high production of floor pans for Fisher Body Div. of General Motors. With the introduction of automatic handling equipment, output of the press line has been more than doubled. Manhours per piece have been cut at an even faster rate.

**Higher Production** — Without automatic handling equipment, the three Hamilton presses at Willow Run produced 125 pieces per hr. With the addition of automatic handling equipment, output has jumped to 288 pieces per hr. Maximum hourly cycle of the presses is 300 strokes.

The new K-F equipment includes iron hands which remove stampings from the dies automatically. Conveyers are also tied into the press cycle to transport parts to the next operation. The use of similar setups on smaller presses is an almost certain trend.

**Gamble Pays Off**—Continental Motors Corp., a Detroit firm which was hanging on the ropes only a few years ago, expects to produce 475,000 engines for its civilian customers and the Armed Services this year. Estimated sales will reach $160 million, running approximately 66 pct ahead of 1950.

Continental now has plants at Muskegon, Milwaukee, Detroit and Dallas. Approximately 3500 employees have been added during the past year, bringing the total number on the payroll to 11,600. These gains have been accomplished under the leadership of C. J. Reese, president of the company, one of the hardest working and most far-seeing industrial leaders in Detroit.

**Engines**—During the past 2 years Continental has tooled and placed in high production a large plant devoted exclusively to the manufacture of 375, 500 and 810 hp tank engines — standard designs with many interchangeable parts. The firm has also developed an entirely new line of six air-cooled "Packette" engines for use by the Army Air Forces in ground installations. The line includes six models of one, two, four, six and eight cylinder design ranging from 15 to 250 hp. Continental has added 25 pct to its floor space at Detroit and has set up facilities to produce a 525 hp radial engine for helicopters. The company is also tooling for the production of a 500 hp engine for light tanks and a 375 hp unit for front line vehicles.

**Red to Black Ink**—Five yea ago Jack Reese took a big gamb He argued that standardization engines for military vehicles w not only desirable but inevitab Continental took a severe financi loss during the early years wh research and development we moving ahead at full speed, but t company had no government co tract. Continental engines ha now been adopted by Ordnance standard for use in front line veh cles including tanks, gun carrier heavy trucks, prime movers, e The Continental tank engine desi will also be built by Chrysler a other prime tank contractors.

The new Packette engines mu be able to start at 65° below ze They have interchangeability many parts with Continental's reg lar horizontally-opposed airpla engines. The engines also have load-sensing governor which aut matically increases engine speed additional load is applied.

**New Field** — Replacement half of the steam locomotives American railroads in a little mo than a decade may not be the grea est and most spectacular accom plishment of the Diesel engin Diesels are now threatening ser ously to take over transport on t public highways.

Latest advance is the introdu tion by General Motors Truck Coach Div. of its new "Millio Miler" which will power an exte

# assembly line

*Continued*

ive line of GMC Diesel trucks and highway tractors. Roger M. Kyes, general manager of GMC, calls the new engine the greatest forward step in Diesel power for trucks since GM introduced the 2-cycle Diesel trucks during 1938.

**Fuel "Brain"**—Most important engineering change is the new fuel modulator. This is an automatic control device that feeds exactly the right amount of fuel and air for maximum efficiency regardless of throttle position. The new mechanical "brain" operates at speeds below 1500 rpm. The fuel modulator is incorporated into the governor assembly. It is expected to minimize sludging and carbon deposits, thereby reducing maintenance costs.

Other improvements include a new camshaft (which keeps valves open longer, providing freer breathing and better scavenging), a stronger crankshaft with Tocco-hardened journals and pins, roll-burnished fillets and peened oil holes, heavy-duty copper lead bearings for crankshaft and connecting rods. The cylinder head and cylinder block have ground faces. This permits metal-to-metal contact without the need for a cylinder head gasket. No. 1 and No. 2 piston rings are chrome-plated.

**Won't Hurt**—The industrywide scrap drive by the automobile industry is not expected to hurt the automakers' chances for obtaining steel. Customers with large quantities of scrap to return to the mills will naturally get consideration from steel companies who are already beginning to worry about how they will get through the winter months on their lean scrap piles.

There has been a pickup in automobile sales during recent weeks. Automobile executives vigorously deny that automobile production is currently running substantially ahead of sales. With few exceptions, car dealer's stocks are being reduced as the auto production rate is cut back, either as the result of government decree or because of shortages of raw materials. Most outsiders don't realize that the greatest sales effort in the automotive industry is not in the new car field. Estimates place the number of used cars sold at nearly five times the number of new cars moved to customers.

**Dealers Organize**—Organization of automobile dealers on a nationwide basis is paying off both in Washington and Detroit. The automotive dealers have powerful representation in Washington. Similarly, through organization, they have steadily increased their influence with motor car manufacturers. Last week Ford announced that each of its 6400 dealers will have an opportunity to attend meetings of the Ford Dealer Council. Ford is the first automobile manufacturer to adopt fully-elected dealer council plan system of operation.

**Automotive Yearbook**—The essential nature of the automobile in our national life is hardly open to question any more and the latest edition of Automobile Facts and Figures compiled by the Automobile Manufacturers Assn. clearly indicates this.

According to the 1951 edition of "Automobile Facts and Figures," approximately 73 pct of the nation's private automobiles are used for traveling to and from jobs, conducting business or doing work on the farm.

Other interesting disclosures of the 1951 yearbook are:

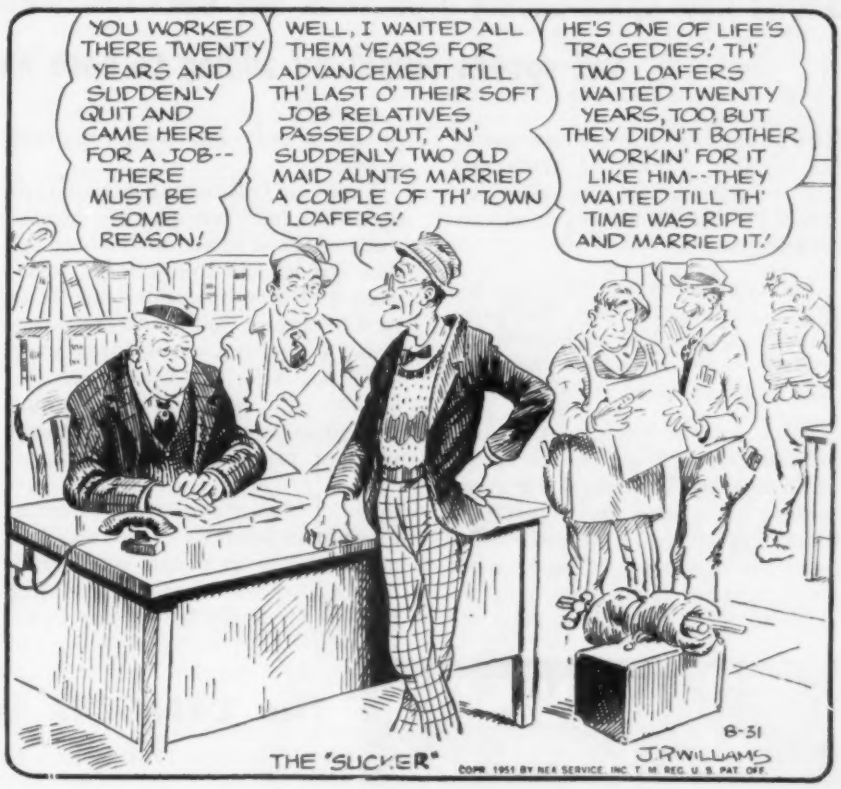
(1) Automobile records set during the year include passenger car output, total motor vehicle registrations, gasoline consumption and vehicle mileage driven.

(2) More than half of the cars on the highways in 1950 were prewar models. Average age of U. S. motor cars today is 8 years as compared with 5½ years in 1941. There are more than one million trucks in use that are 14 years old or more.

(3) The life of motor vehicles has more than doubled in 25 years. Scrapped cars today average 14 years of age compared with 6½ years in 1925. Average lifetime mileage has increased from 25,750 to 120,500.

Special motor vehicle taxes paid in 1950 totaled $4,354,033,000, an alltime record.

**THE BULL OF THE WOODS** — By J. R. Williams



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# west coast progress report

*digest of far west industrial activity*

*by R.T.Reinhardt*



**Titanium Problems** — Titanium Metals Corp. of America is launched on a production program of titanium metal comparable to Alcoa's initial aluminum production. The daily press has carried stories based on releases of the corporation, but there is much yet to be understood about the complications of multiplying production of this strategic metal eight times.

National Lead is already turning out about 2200 lb of sponge titanium per week in the pilot plant of the U. S. Bureau of Mines at Boulder City, Nev., preparatory to full scale production in the near-by old Basic Magnesium plant. In this small plant, operations men are being trained for the relatively huge production job ahead.

**The Raw Material** — Titanium tetrachloride has been produced by Stauffer Chemical Co. for the present pilot production. Although western representatives of Titanium Corp. won't say so, it is reasonable to believe that this essential chemical will be produced at Henderson from either imported rutile or ilmenite ores. Low grade rutile ores are common in the West—only the accessibility and grade are determining factors in its use.

Sad to relate, prospectors who have located deposits of either discover that such ores are worth only 1¢ to 2¢ per lb. The batch method of producing the pure metal is what brings the cost of the metal to $5 per lb. Still, there are western prospectors scouring the mountains for profitable deposits of the ores.

**Logical Spot**—Facilities of the old Basic Magnesium plant are such as to provide economic production of chlorine needed in the titanium process and accessibility of either domestic or Australian rutile or ilmenite ores make this area well suited to production of the essential titanium tetrachloride chemical.

**Western Ingots**—Sponge titanium has been reduced to ingots at Allegheny Ludlum's plant at Watervliet, N. Y., where it is finished into strip, sheet, bars, etc. Plans announced by Titanium Corp. imply that this process will be repeated for the production from Henderson, Nev.

Some steel plants with adequate electric power contracts in the West are wondering if there is any reason why they should not have a chance at melting the sponge to ingots and carrying on the rolling processes.

**More Manganese?**—Manganese, Inc., in attempting to utilize low grade western manganese ores has hit a stumbling block in fuel supply. The company wants gas delivered to its proposed plant at Henderson, Nev., but the Federal Power Commission is hedging on the company's application for a pipeline from Toprock, Ariz., to Henderson.

Meanwhile, the U. S. Bureau of Mines at Boulder City, Nev., is going ahead with a pilot plant to recover manganese from low grade ores of Artillery Peak in Arizona, which carry only about 10 pct of the vital mineral. More than 2500 tons of the Artillery Peak ores are stockpiled at Boulder.

Pascoe Steel and Construction Co., Pomona, Calif., is engaged in alterations and new construction at the Boulder City plant to handle this ore, under a $90,854 contract.

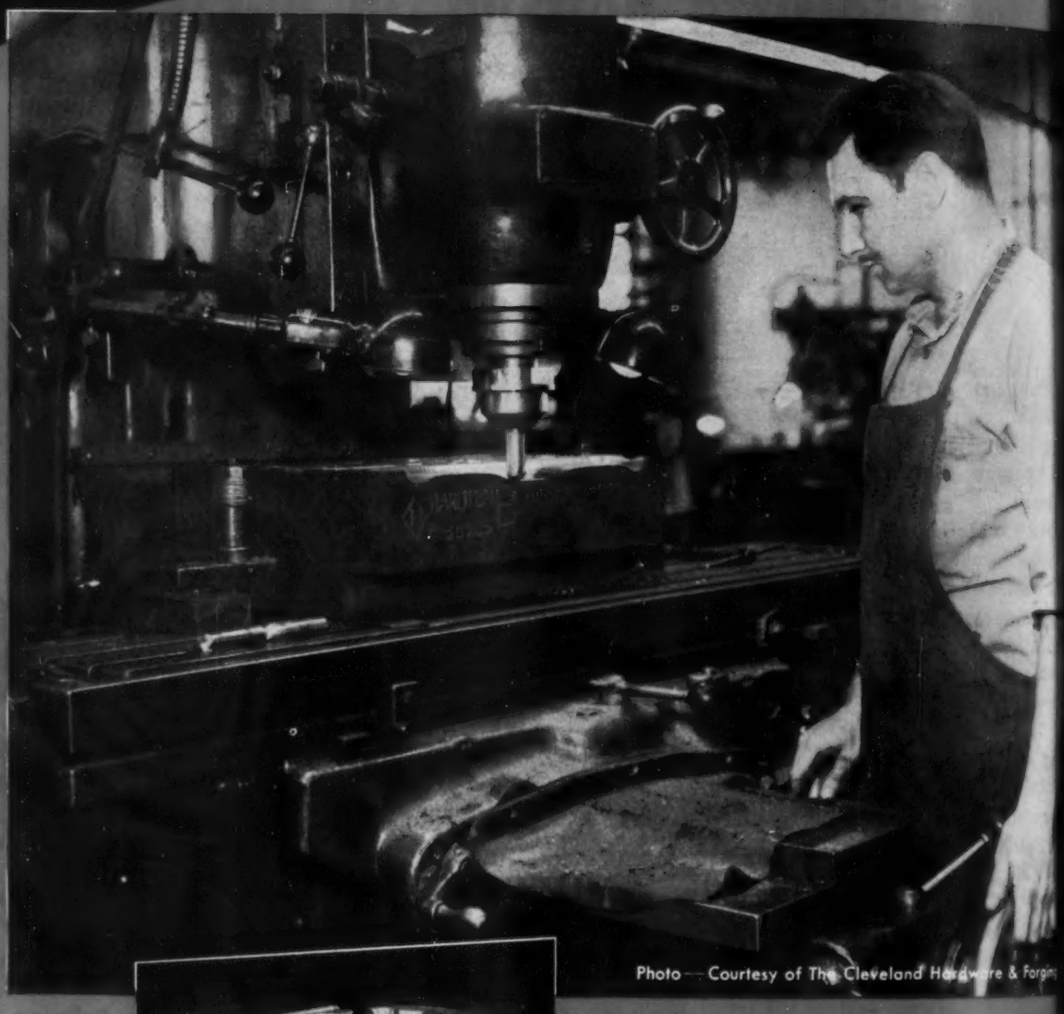
**Scrap Notes**—There is no apparent easing of the scrap supply in the West. Relining of Geneva Steel Co.'s blast furnaces in Utah has increased scrap demand there which is reflected on the Coast, and high ingot production is taxing inventories to the limit.

Breaking of four 800-ton ships is under way at San Pedro which will yield about 2000 tons of open-hearth scrap to ease the southern California situation a little.

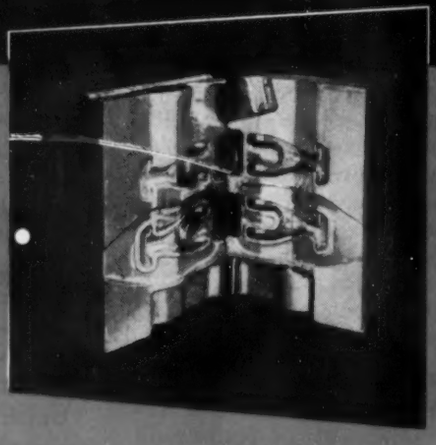
Union Pacific railroad recently reported that it has turned in approximately 2 million gross tons of scrap since the end of the last war from collection points at Los Angeles, Denver, Portland, Pocatello, Cheyenne, Omaha, and Kansas City.

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Photo—Courtesy of The Cleveland Hardware & Forging



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# *the federal view*

## *this week in washington*

*by George H. Baker*



**Three-Year Tool Boom**—Undiminished high demand for machine tools apparently is in prospect, if nothing goes haywire with present government planning. General Services Administration is ready to make down payments on $1 billion worth of tool orders just as fast as contracts can be negotiated.

But this amount is just about one-third of the $2.9 billion worth of tooling-up which defense production officials estimate is still needed.

Present rate of production, estimated by these officials at about $800 million annually, contemplates deliveries extending well beyond the leveling-off point of defense production. This point has been tentatively set as mid-1953.

**Plan Tool Diversion**—Office of Defense Mobilization believes the new price ceilings over machine tools will effectively ease the production bottleneck. But this does not mean faster deliveries for everyone.

Top officials say the next job is to get as many plants on schedule as possible. This may be done by ordering machine tool deliveries diverted from plants of manufacturers of some 550 key products who already are up to or ahead of the government's production expectations.

Tools would be turned over to new plants nearing completion, or to existing plants which are lagging for lack of tooling, under this plan to help where it counts.

**After 1953, What?** — "If the economy is over the hump by mid-1953, what then?" It's a poor politician who doesn't try to keep his ideas for controlling business at least one jump ahead of the existing set-up.

To this end, the Senate-House Economic Committee poses an intriguing question, and then quickly supplies its own answers.

**Continue Defense?** — Peace in Korea—when, and if, it comes—may not necessarily spell the end of the current mobilization program, the argument runs. (Up to now, Defense Mobilizer Wilson has maintained that business can anticipate freedom from controls in 1953.)

New line of thinking is that defense spending might well be spread over a longer period of years, thus relieving inflationary pressures by increasing civilian goods.

**Forced Dispersal** — Industrial-area congressmen of both political parties are sizzling at President Truman's decision to force geographic dispersal of defense plants.

Complaint is that the White House is trying to accomplish by executive action what the Congress refused to approve in legislation.

**Much Power**—Mr. Truman made it clear in an executive announcement that he intended to force dispersal of plants to isolated areas through offers of preferred treatment in the granting of government loans, awarding of contracts, granting of tax concessions, etc.

Congress is finally waking up to the fact that the sum of the war powers it has voted the White House in the past 12 years permit the chief executive to carry out almost any program imaginable in the name of "national defense."

**Small Firms Lax?**—Congressmen complain that reports from smaller firms over lack of government business don't jibe with figures issued by the Office of Defense Mobilization.

"The big fellows are hogging all the contracts," is one of the commonest howls in congressional mail these days.

"The business is there," Charlie Wilson retorts. "If a fellow is not getting any of it, he is a little lax."

### Quote of the Week:

**The mind staggers at the vast national and international bureaucracy that is growing up under the cloak of rearmament and to control inflation. Maybe all this is necessary, but I doubt it.**

**—Felix Edgar Wormser, Secretary, Emergency Lead Committee**

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# How to Help Stretch the Steel Supply

## 1. Tell Us All!

You'll be helping to make the most of available steel if you give your supplier *full information* when ordering. For instance, by giving us your length multiple—the cut length you will actually use, you may enable us to fill your order in "shorts." Moreover, when we know your multiple, it may be possible to ship pieces that will cut with minimum waste, thus reducing your scrap loss. Whenever possible, also give alternate gauges, sizes and qualities that may be used when your exact requirement is not available.

## 2. Make It Last!

Because breakdowns may necessitate replacements not readily available under present conditions, extra care of machinery is essential. With only a little more than routine maintenance, such as proper painting and lubricating, the useful life of plant property and equipment may be prolonged.

## 3. Turn in Your Scrap!

To keep record steel production rolling the mills must be fed a constant flow of scrap. For every ton of steel produced, at least a half-ton of iron and steel scrap is needed. Now is the time to comb your plant for old, worn-out, or outmoded machinery and equipment—anything that constitutes "heavy melting" scrap—and turn it back into channels of use. Your Ryerson representatives will gladly advise you on how best to sell your scrap quickly and profitably.

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By D. I. Brown
Technical Editor

THE IRON AGE
FOUNDED 1855
TECHNICAL ARTICLES

# Continuous casting of oxygen-free copper RAISES PRODUCTION

**The Rossi continuous casting machine at Carteret has been in operation since 1948. This machine casts rounds up to 8 in. diam and slabs up to 26 in. wide. Continuous casting has been the answer to the trade's demands for heavier coil weights of oxygen-free copper.**

Continuous casting of metal has long been used to great advantage in the nonferrous industry. There has been a host of casting machines used in past years. The bibliography lists technical stories carried in THE IRON AGE over the past decade or so on continuous casting of nonferrous alloys.

Over the years the Rossi continuous casting machines have been prominent and have been chiefly responsible for many of the major advancements in the science of continuous casting. A brief history of the Rossi process will appear in the next article of this series.

In January 1951, a company was formed to further promote, develop and install continuous casting machines for all metals including steel. This company, Continuous Metalcast Corp., 17 John Street, New York, is headed by Irving Rossi. The company is jointly owned by Mr. Rossi, Allegheny Ludlum Steel Corp., Scovill Mfg. Co. and American Metal Co.

This article is the first of a series on continuous casting methods based on the technique and machines perfected by Continuous Metalcast Corp. The nonferrous metals, copper, brass and aluminum, will be featured first.

The continuous casting of steel will follow the nonferrous articles. Allegheny Ludlum Steel Corp. began to experiment with the Continuous Metalcast process for steel early in 1949. A pilot has been successfully operated and a commercial plant will soon be in operation. The last article in this series will describe the latest methods and techniques of casting steel now in use.

Late in 1947, the American Metal Co., a sub-

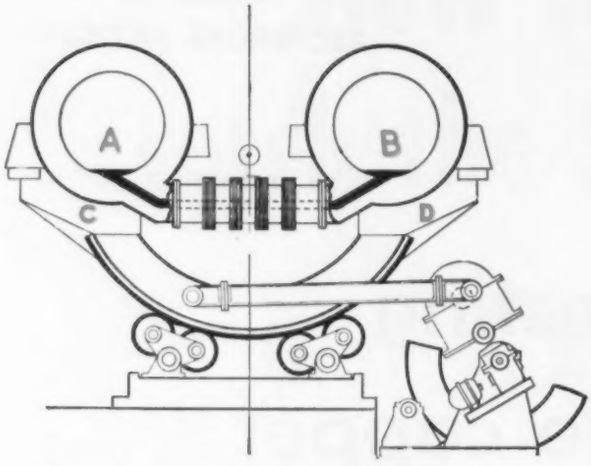



FIG. 1—Cross-section of the Summey, two-hearth rocking furnace. This is the first large induction furnace ever used for nonferrous metals. Total electrical capacity is 2100 kw and furnace voltage is varied from 100 to 500 v through the 3 tap changing auto-transformers. Chambers A and B in the drawing each hold 12,000 lb supported on the rocker C. Molten copper flows from one chamber to the other as the furnace rocks through the refractory train D.

sidiary of U. S. Metals Refining Co., started the erection of a Rossi casting machine at Carteret, N. J. They realized that the real answer to fabricators' demands for heavier coil weights lay in continuous casting of sizable shapes in long lengths. Past experience at other companies which had proved the practicability and economies of the Rossi machine led American Metals to adopt this type.

The machine at Carteret in continuous operation since late 1948 has been eminently successful for casting of oxygen-free (OFHC) copper in both cakes and rounds. Rounds 6 to 8 in. in diam and slabs or cakes in two sizes, 4x13 in. and 3½x26 in., have been produced by this machine in large tonnages.

The hot metal for the casting machine at Carteret is supplied by a low-frequency induction barrel-type furnace. A schematic view of this novel furnace appears in Fig. 1. This two-hearth rocking type furnace holds 12 tons of molten copper and can consistently supply 8 tons an hr to the continuous casting machine. The furnace rocks constantly through a 7° arc and pours from one end at the low point of travel through the arc. The metal in the furnace is kept under a protective blanket of broken graphite to preclude any oxidation.

Molten metal from the furnace is discharged into a refractory lined glo-bar heated launder and is conveyed to a holding furnace mounted above the Rossi machine. Producer gas is introduced into the 50-ft long launder to protect the molten copper as it travels through the launder. The glo-bars are spaced every 6 to 8 in. and are mounted over the 6-in. deep trough.

The induction holding furnace holds 3 tons of metal. Temperature of the metal is held at 2150°F from the melting furnace through the launder and holding furnace to the reciprocating mold of the casting machine.

The basic invention of the Rossi-Junghans machine is the reciprocating mold, Fig. 2. The mold reciprocates in a vertical plane around the casting which is constantly and independently being moved downwards by the withdrawing rolls.

The downward motion of the mold during reciprocation is in synchronism with the downward motion of the entire casting. The upward mold motion slips the mold up around the descending casting. Actuated by a cam, the motion upwards is about 3 times as fast as the downward motion at any casting rate.

Metal is fed into the mold in constant flow equivalent to the rate at which the casting moves downward. Thus the metal pool surface remains at a constant level with respect to any nonreciprocating part of the machine.

Roughly one third to one half of the total heat removal is performed by the mold. The remainder of the heat is removed by water spray cooling of the casting upon emergence from the mold. A water supply providing for from 50 to 70 gpm of water for the mold and 100 to 150 gpm for the sprays is adequate for 8 in. billets and 4x13 in. cakes.

The traction or withdrawing rolls are located beneath the sprays. These constantly turning rolls propel the casting downward into the cutoff saw assembly.

### Continuous Automatic Cutoff

On passing through the jaw clamps of the cutoff saw and into the raised discharge basket, a measuring gage is actuated which determines the cutoff length. When this length has been reached, a manually-operated hydraulic valve causes the jaw clamps of the saw assembly to grip the descending casting. The counterweighted saw is then urged downward with the casting. As the casting, saw and discharge basket slowly descend at the same speed, the cut is made and the cut length ultimately drops into the basket. The discharge then lowers itself away from the saw, tilts and ejects the piece onto a roll conveyer and elevator which carries the casting up to ground level for inspection. The 46-in. diam saw takes a cut about ½ in. in width.

After the saw blade has returned from its cut, and the jaw clamps have been released, a motor-driven clutch permits the operator to raise the saw assembly up in preparation for the next cut.

The molten metal supplied to the holding furnace, Fig. 3(A), of the machine enters through launders (B) in a constant stream during operations. The holding furnace of about 6000 lb capacity is provided with a detachable nose-piece (C) to permit repairs. Heat is maintained in the furnace by one 100-kva Scomet inductor mounted



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on the rear. As shown, the furnace is in the pouring position, that is, tilted forward so that the metal in its body flows forward into the nose-piece and thence into the pouring-distributor tube which extends vertically into the water-cooled solid copper mold (D).

Rate of flow from the bottom poured tundish is regulated by the stopper needle-type valve and the ¾ in. ID nozzle.

Tilting of the furnace is accomplished hydraulically around trunnions, Fig. 3(E). In the "no-pour" position, the furnace rests (F) are down on beams (G). Furnace tilt controls are at (H), where also may be found controls (I) for starting and stopping of the machine drive, and the speed control handwheel. Telephonic communication between the casting operator and the saw operator below is provided by a sound-powered handset mounted on the same control column, but not visible.

The operator's right foot rests on the mold table which reciprocates, carrying on it the mold. The mold cavity is chromium plated to a thickness of about 0.005 in. Cooling water control to the mold is regulated by valves as at (J) and measured by rotameters.

In the casting of OFHC copper, the metal in its molten state is always covered by a reducing gas atmosphere of converted city gas. The gas line to the lead-in launder (K) and furnace (L) may be seen. The mold itself is hooded (M) and gas is fed into this hood as well.

Metal flow rate from the furnace into the mold is controlled by the device at (N) which raises or lowers the metal flow control pin (O) which valves the tundish or nose-piece outlet.

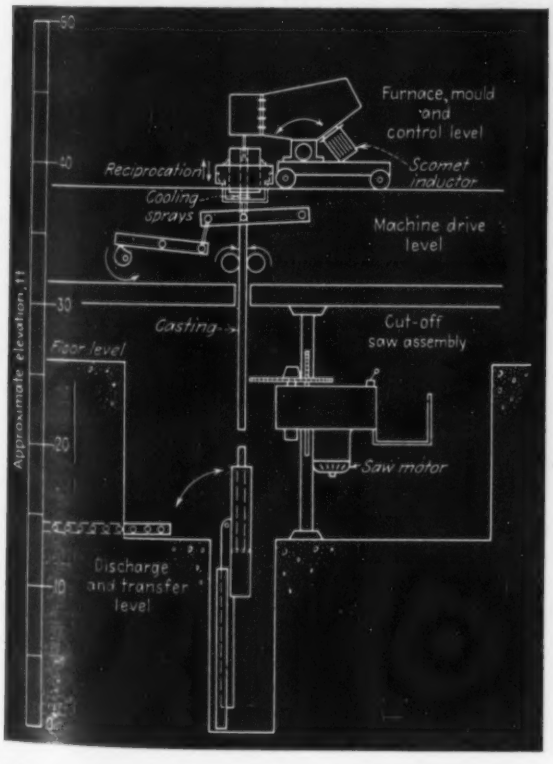



FIG. 2—Schematic drawing of the Rossi casting machine.

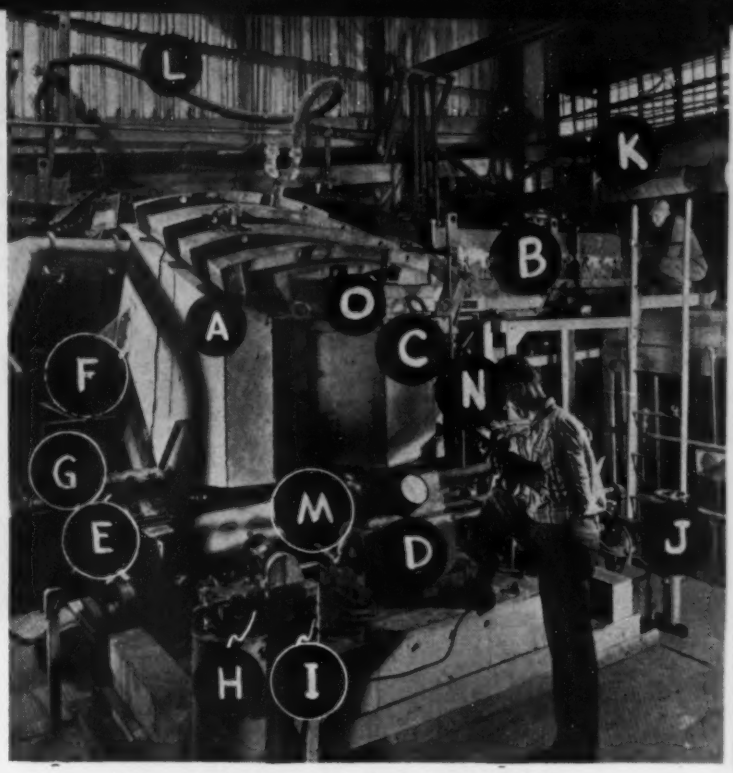



FIG. 3—Molten metal is metered from the induction holding furnace into the reciprocating mold. At the pouring level only one operator is needed.

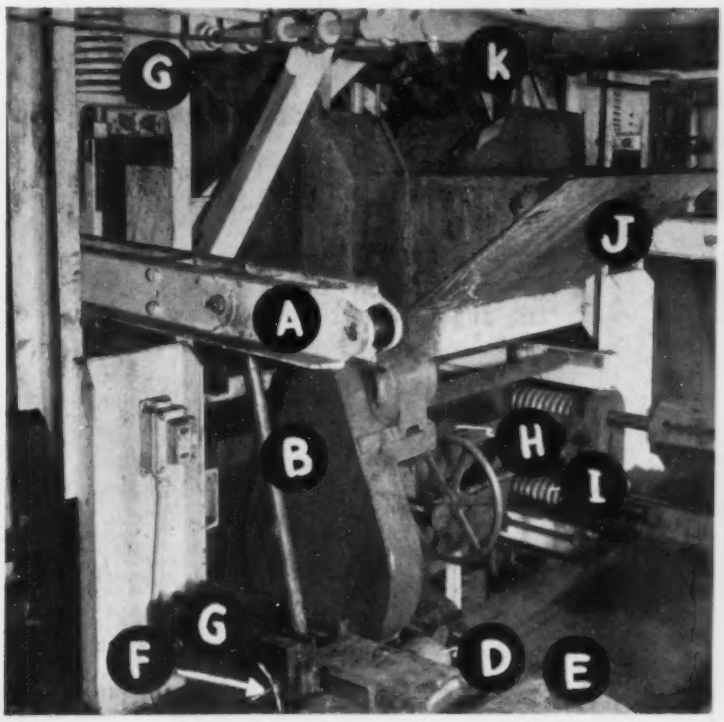



FIG. 4—Below the pouring floor the cast bar passes through the water sprays and pinch rolls.

Mold lengths vary from 18 to 28 in. for 6 to 8 in. diam billets, and cakes measuring 4x13 to 3½x26 in. The mold is solid, water-cooled, copper block. Butane or propane are fed into the hood over the mold. The product of combustion, carbon, settles on the top of the metal in the mold and acts as a lubricant between the cast skin and the mold wall. Rapeseed oil has been used with success especially in the casting of OFHC

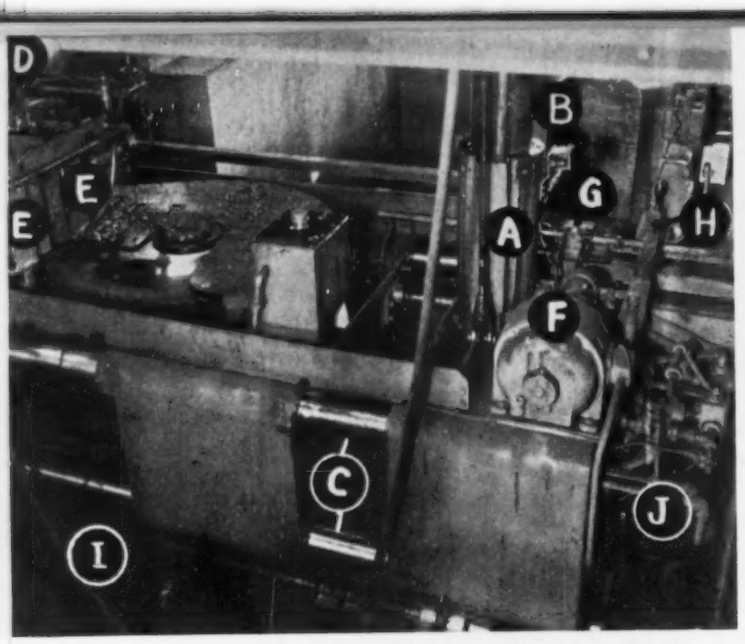



FIG. 6—Cutoff saw and following device work in conjunction with the casting machine.

## Continuous casting—copper (continued)

phosphorized copper. The average yield from holding furnace to finished billet is 98 pct. However, the specifications prescribed by the customer usually determines the amount of scrap generated.

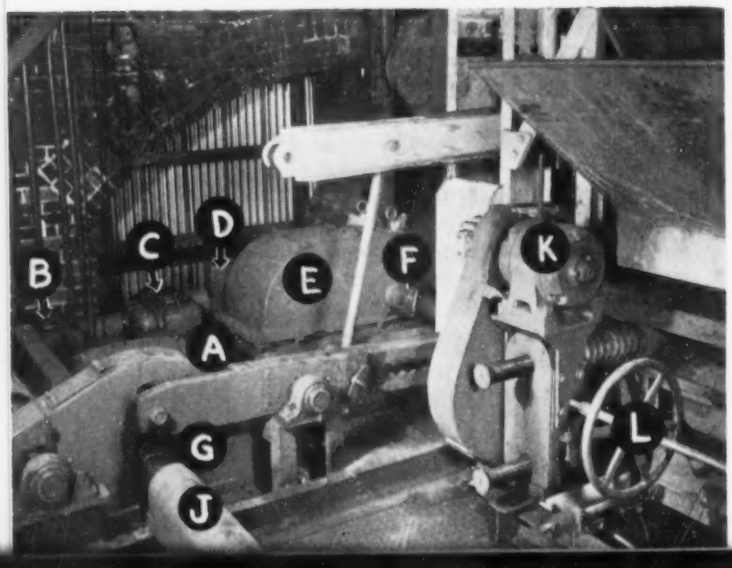
The two driven reciprocating arms which impart the motion to the mold table on the deck above, each through a connecting rod (not visible), are seen at (A), Fig. 4. These operate as second class levers. Arms (A) are in turn reciprocated through connecting rods (B) from the two driving reciprocating levers (C). These latter levers are pivoted on bearings (D) and driven by cams, under casing, at (E).

The amplitude of reciprocation can be varied from ½ to 2 in. by shifting adjustable wrist pins (F).

The weight of mold table and mold is balanced partially by the springs (G) of which there are four. The two rear ones are not visible.

The casting is continuously withdrawn from the mold by the partially visible traction rolls (H). These rolls, which are 10 in. diam and 16 in. long, have a knurled surface to enhance their grip. They are also provided with a broad circumferential groove ½ in. in depth to permit the casting of round shapes up to 10 in. diam, although on this particular machine, the size is limited to an 8 in. diam round because of the discharge basket. The grip of the rolls on the casting is achieved through 8 opposed sets of tension springs (I). Maximum slab size for which this particular machine is designed is 4x26 in. in cross-section. Cast lengths up to 9 ft can be handled by the conveying equipment.

FIG. 5—Machine drive arrangement and linkage for pinch rolls and reciprocating mechanisms.




Pan (J) is the splash tank to receive and drain the cooling spray water, the feed lines for which may be seen at (K). The cast sections are cooled to 100°F maximum temperature by the time the metal leaves the pinch rolls.

In Fig. 5, the drive of the machine is shown. Both the withdrawing rolls and the mold reciprocating mechanism derive their power from a 3-hp motor (A). These mechanisms are linked, in the first case from the motor through two PIV variable speed reducers (B) and (C), fixed speed reducer (D) and pinion gear train (E), (under cover), to the universal roll shafts (F) and secondly to the reciprocating cam (G) from the other side of PIV unit (B), through speed reducer (H) and shaft (I). Covered shaft (J) interconnects and powers the other cam.

### Casting speed and pinch rolls synchronized

The speed of the downstroke in reciprocation and the rate of withdrawal are synchronized by adjustment of PIV unit (C) through the chain extending from the upper deck. This synchronism is maintained for any casting speed at any given setting of the reciprocation amplitude. The casting rate may be varied by adjustment of ratios in PIV unit (B), through the chain from the hand wheel on the operating deck.

Motor (K) operates the roll tension spring pull rods and avoids much manual turning of handwheel (L) when adjusting grip of rolls on the casting.

The flying cut-off saw, Fig. 6, weighs approximately 8 tons, does not show the balancing counterweights which run to the left and right of the assembly. However, one of four counterweight cables (A) is seen. Vertical travel of the saw is along two columns, one seen at (B). The 33-in. maximum cutting stroke of the saw is along rails (C). The blade revolves at 190 rpm and is driven by a 40-hp motor. Hydraulic jaw clamps which engage the descending casting (D) during cutting cycle are seen at (E). Hydraulic pressure for the saw clamps and saw feed at a pressure of about 800 lb per sq in. is generated by pump assembly (F) and is controlled by operating valve (G). Clamping, sawing and saw return are performed in automatic sequence. After the cut is made, the saw assembly is returned to its up position by engaging racks, (not visible) on the vertical travel columns through clutch (H). Saw is then raised through power from motor (J).

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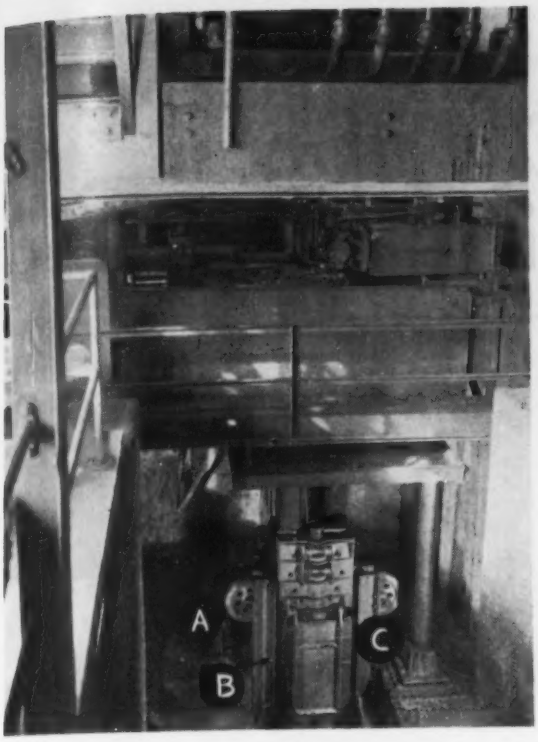



FIG. 7—The discharge and transfer method works automatically. The basket is tilted hydraulically.

The discharge basket (I) is shown in its raised position ready to receive the casting. The tube in the center of the basket is an auxiliary device used in this instance to receive a 3-in. diam casting being made at the time.

The 7-ft long discharge basket is shown below the saw assembly in Fig. 7. It is shown in the "down" position immediately prior to tilting, (see Fig. 8).

The basket is hydraulically operated from a piston which acts on a cable and sheave system (A) to raise and lower the basket in guides (B). The final step of the discharge from the basket is the tilting around point (C) which then allows the casting to roll out of the basket onto a slightly inclined roll conveyer and into an elevator which, automatically actuated, raises the casting to ground level from the discharge pit. Tilting of the basket is performed hydraulically.

Lowering, tilting, return and raising of the basket into receiving position under the saw is performed in automatic sequence by hydraulic solenoid valves actuated by limit switches at appropriate points.

Thus far the machine has proven adaptable (see Fig. 9) for the casting of oxygen-free (OFHC) phosphorized copper in both cakes and



FIG. 9—A typical macroetch cross-section of continuously cast oxygen-free copper.

rounds. The casting of tough pitch, and phosphorized tough pitch copper has been tried but with, as yet, inconclusive results, principally because of the difficulty of metal supply which must be transported from a distant melting source. The entire potential of the machine has not yet been exploited, but when this has been accomplished and the operation considered standardized, it bids fair to make marked changes in the copper casting industry.

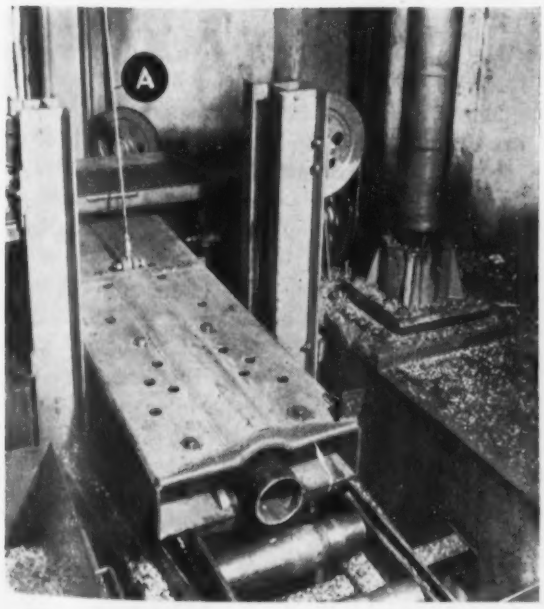



FIG. 8—The basket shown here in discharge position.


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# MICROHARDNESS of constituents in steel tested

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Helsingfors



Microhardness testing methods provide a suitable means of studying the variability of mechanical properties of steels of above or below 0.85 C when in annealed condition. The hardness of particles such as ferrite, pearlite, cementite or martensite as they appear in a finely divided mixture, and their relative proportions and arrangements govern the mechanical properties of steels.

The properties in bulk may, however, be different from those of the particles in a finely divided mixture. Of the properties amenable to measurement of the individual constituents, only the hardness can be obtained. Microhardness testing methods provide a suitable means for this purpose.

Campbell and coworkers[1] measured the microhardness of cementite with a new hardness tester and found a value of about 900 Vickers. Hanemann and Bernhardt[2] found hardnesses of 3300 for the carbides in a high speed steel and of 1500 for the martensitic matrix.

Since the pioneer work of Lips[3] in 1937 numerous instruments for microhardness testing have been designed. In these tests the Hanemann microhardness tester, made by Zeiss, was used. The diamond pyramid is fastened onto the front lens of the objective. Load is directly indicated by displacement of a scale in the eye piece. The load measuring device need not be exchanged against the measuring objective after load application.

Testing accuracy increases as the load increases, giving a larger impression. The size of the structural constituent, however, limits impression size. Minimum size of a constituent for hardness measuring is about 1/100 mm. Thickness or depth of the constituent may influence the value obtained. A shallow particle gives erroneous values.

If the depth of particles is unknown, from three to ten measurements must be taken for reliable results. If particles are harder than the matrix, the higher values are more reliable.

### Hardness number formula

The hardness number follows from: Hardness number=load divided by the pyramid surface of the impression or, if $L$ = load and $d$ = diagonal of impression and $B$ = pyramid angle, $H = 2L \cos B \div d^2$. If the load is counted in grams and diagonal in microns then the hardness is $H = 1855 \cdot L \div d^2$. The diamond hardness number (Dhn) corresponds to the Brinell number for hardness values up to about 400.

A number of steels were tested after different heat treatments. Also tested were steels of different carbon contents in both the annealed and hardened condition, case hardened steels and alloy steels containing tungsten and chromium.

Ferrite hardness in very low carbon, silicon and manganese free steel (Lancashire iron) is around 100 Dhn. In commercial low and medium carbon steel containing 0.25 Mn and 0.50 Si, the ferrite measured was 170 Dhn, see Fig. 1. In one series of tests, small specimens were austenitized and transferred from that temperature into a lead bath held at various temperatures between $A_1$ and $A_3$, and then slowly cooled. This isothermal treatment results in different fineness of distribution of the ferrite formed from austenite.

Even the proportion of the relative amounts of ferrite and pearlite can be varied to some degree in this way. The microhardness of the ferrite

Hanemann microhardness tests have been used to determine the microhardness of ferrite, pearlite and cementite in several commercial steels. Ferrite in low and medium carbon steel containing 0.25 Mn and 0.50 Si measured 170 Dhn. Pearlite in commercial steels of 0.35 C, 0.45 C and 0.60 C measured 310, 320 and 315 Dhn respectively.

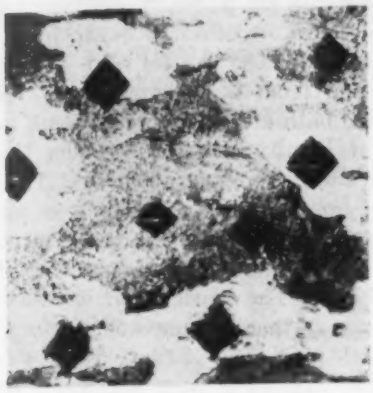


FIG. 1. Steel 0.35 C, cooled slowly. Ferrite and pearlite are shown. Load was 50 g. 300X

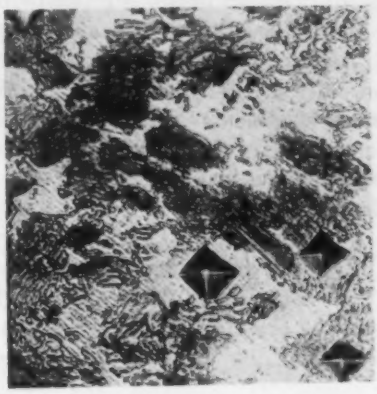


FIG 2. Steel 0.60 C, cooled slowly. Ferrite and pearlite. Load used was 25 g. 450X

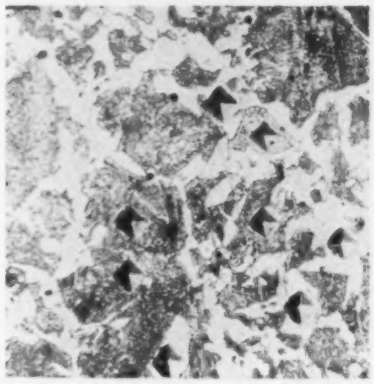


FIG. 3. Steel 0.35 C. From 1742°F transferred to lead bath at 1202°F. Ferrite and pearlite. Load 25 g. 300X

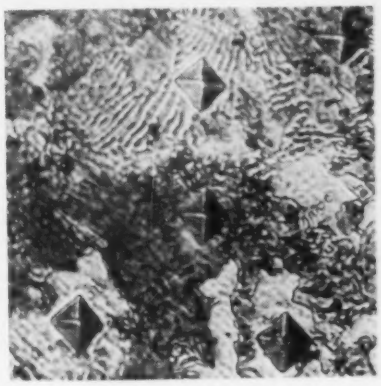


FIG. 4. Steel 0.60 C. From 1610°F cooled in air. Ferrite and pearlite. Load 10 g. 800X

was, however, not affected by this treatment. Different cooling rates from austenitizing temperature, varying from cooling in the furnace to air-cooling, resulted in smaller amounts of ferrite in proportion to pearlite with increasing cooling rate. Hardness of ferrite, however, was found to be nearly the same. Different cooling rates through $A_1$ affect the hardness of pearlite appreciably, especially with eutectoid steels.

The microhardness of pearlite in commercial steels with 0.35 C, 0.45 C and 0.60 C was 310, 320 and 315 Dhn respectively, see Figs. 1 to 4. When tested in bulk by the Brinell method the hardness of the individual constituents of the structure is averaged and levelled out since the indenter then extends over a great number of particles. For a ferrite-pearlite mixture in 0.35 C steel in the annealed condition, the Brinell test gave a value of 180 Bhn.

In a previous investigation on the effect of the distance between the pearlite lamellae on hardness, yield point and strength it was found, confirming Gensamer's results, that interlamellar distance had a considerable effect on these properties.

With a lamellar spacing of 0.9 microns, the hardness was 196 Dhn; with a spacing of 0.48 microns, the hardness was 309 Dhn. The interlamellar distance can be varied either by isothermal treatment or by different cooling rates. In steels with 0.60 C and less there was no measurable hardness difference, exceeding the

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## Microhardness tests (continued)

usual scatter, of the pearlite in specimens cooled at different rates from air-cooling to cooling in the furnace.

The pearlite colonies have, in general, different orientations in relation to the plane of polish. However, no dependence on the angle at which the pearlite lamellae cut the plane of polish could be found, at least in a degree exceeding usual spread of the values. See Fig. 5.

Microhardness of cementite can be studied on spheroidized hypereutectoid steels. In ordinary pearlite the cementite lamellae are too thin for hardness testing. Cementite in larger masses than normally occurring can be obtained by carburizing treatments. Cementite is easily obtained in needle-like shape along crystallographic planes of the original austenite. See Fig. 6. The following values were found by the microhardness of cementite: Lancashire iron, carburized, 750 to 980 Dhn; 0.35 C steel, carburized, 760 Dhn; and 0.50 C steel, carburized, 810 Dhn. The orientation of martensite needles had little effect on microhardness specimens. Needles obtained in tests were too small in width to allow individual microhardness measurements with any degree of accuracy.

A series of impressions was therefore applied on the specimens in order to establish an eventual difference in hardness in a considerable number of impressions. See Fig. 7. The hardness, values obtained on 0.80 C steel varied between 880 and 1080 Dhn, which might well be the usual scatter. For the 0.35 C steel the Dhn was about the same, and possibly somewhat less. The specimens of both kinds did not contain any retained austenite because of the smallness of the pieces (2x1x0.5 cm) and therefore effective quenching.

Specimens of 0.80 C steel were austenitized at 1832°F and from that temperature transferred into a lead bath at 932°F. It is difficult to resolve details of bainitic structures under the microscope at low power magnifications. Therefore, a greater number of impressions were applied to assess the variation in hardness at different spots. The values obtained ranged between 380 and 525 Dhn. The hardness of bainite is of the same order as that of tempered martensite.

A steel with 1.60 C and 12.00 Cr in the

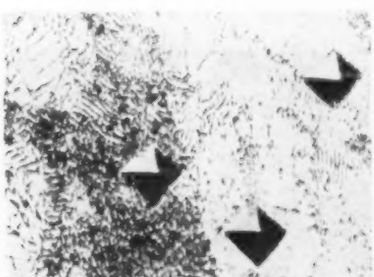


FIG. 5. Carburized steel 0.80 C, slowly cooled. Pearlite. Load used was 50 g. 450X

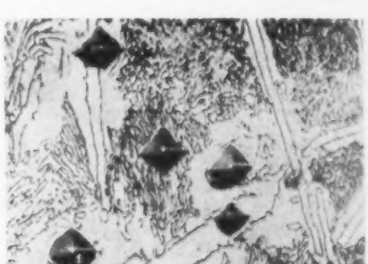


FIG. 6. Carburized steel. Cementite and pearlite. Originally 0.05 C. Load 50 g. 450X

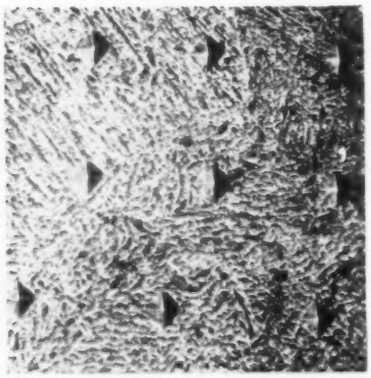


FIG. 7. Steel 0.80 C. Austenitized and quenched. Load 100 g. Samples ranged from 880 to 1080 Dhn. 300X

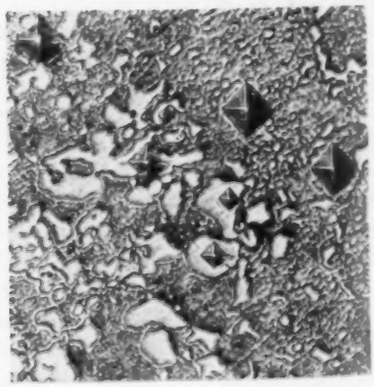


FIG. 8. Chromium steel 1.60 C, 12.00 Cr, slowly cooled. Special carbides in pearlite. Load 25 g. 450X

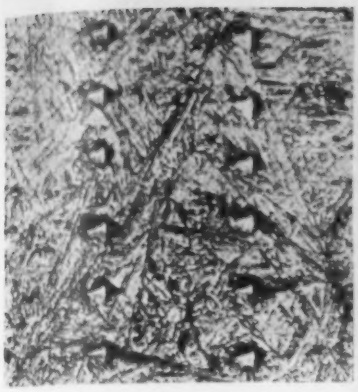


FIG. 9. Alloy steel 0.30 C, 1.00 Cr, 4.00 Ni, 5.00 W, 0.15 V. Aircooled from austenite temp. Load applied was 25 g. 450X

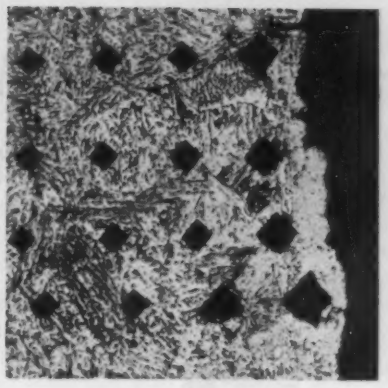


FIG. 10. Steel 0.80 C. Austenitized and quenched. Shows decarburization near suface. Load 100 g. 225X

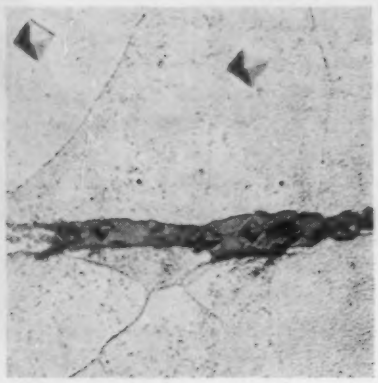


FIG. 11. Oxide inclusions in Lancashire iron appear plastic under impression. Load 25 g. 300X

annealed condition gave microhardness values of 1000 to 1040 Dhn for the special carbides and of 300 Dhn for the pearlitic matrix as in Fig. 8. A die steel with 0.30 C, 1.00 Cr, 4.00 Ni, 5.00 W and 0.15 V in the slowly-cooled condition gave 625 to 690 Dhn, see Fig. 9.

Hot-working die steel with 2.00 C, 1300 Cr and 1.00 W was tested in the oil-hardened condition. The special carbides in this steel possess a very high hardness of 1500 to 2400 Dhn. The spread of values is considerable because of the smallness of the particles. The hardness of the martensitic matrix was 760 to 920 Dhn. With a tool steel containing 1.30 C and 8.00 W in the hardened condition a hardness of 1300 to 1790 Dhn was found for the special carbides, and 1030 Dhn for the martensitic matrix.

While heating to and holding at austenitizing temperature without the use of special protective atmospheres, steel is subject to decarburization at the surface. Microhardness testing is a simple means to establish the depth and degree of decarburization. With an 0.80 C steel, hardened in the ordinary way, the hardness at the outermost layer was only 260 Dhn and increased to 770 Dhn at a distance of 0.3 mm from the surface. This is shown in Fig. 10.

Microhardness tests on oxide inclusions in Lancashire iron, see Fig. 11, gave a hardness of 590 to 625 Dhn. It is remarkable that the oxide appears plastic under the impression. At higher loads, which, however, could not be chosen because of the width of the inclusions, the oxides may show their brittle nature. At rolling temperature the oxide is elongated into streaks, but is likely to be broken up into smaller particles.


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# NEW BOOKS

*"Standard Methods of Analysis of Iron, Steel and Ferro-Alloys."* The fourth edition of a book originally published in 1933 brings up to date the description of standard analytical methods in use in the laboratories of The United Steel Companies, Ltd. Major addition to the fourth edition is a section dealing with physico-chemical methods of analysis which have proved of value. Many methods described in previous editions have been revised. Methods for analysis of boron and iron have also been included. Lund Humphries & Co., Ltd., London. $3.50. 170 p.

* * *

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* * *

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# HOME MADE MOVIES sell machine tools



By S. A. Brandenburg
Sales Vice-President
Monarch Machine Tool Co.
Sidney, Ohio



**You don't have to have the advertising budget of an industrial giant to be able to afford sales movies. Monarch Machine Tool Co. produces its own, with a minimum of professional aid, and finds them highly effective sales aids. Quality is excellent and costs are reasonable—20-min sound films cost less than $5000.**

Many manufacturers have considered movies as a means of telling and selling the story of their products. Most have rejected the idea due to the seemingly high cost involved. But several years' experience of the Monarch Machine Tool Co. indicates they should reconsider the use of this sales promotion tool.

Provided certain essentials are met, home-made sales movies are entirely practical and highly effective. And, they don't require the advertising budget of a du Pont or General Electric.

As far back as 1934 Monarch started to use films in promoting the sale of its turning equipment. Its first film titled "Development of the Lathe" covered the entire Monarch line. Further experimenting developed the fact that a series of films, each covering a specific type of machine only, had more selling punch and audience appeal. It also became evident that for maximum effectiveness, sound was needed. At this point, forward motion stopped for a few years because a program of the kind envisioned seemed much too costly. But in 1947 Monarch started a sound film.

One of the first things learned was that producing a good film does not inevitably involve an exorbitant expenditure. On the contrary, Monarch's film-programming experience to date shows the completion of five sound movies and six silent films, all within a reasonable cost range in comparison to many commercial productions. For instance, cost of each sound film—a black-and-white print of approximately 20-min running time—has not exceeded $5,000. Cost of silent movies has been considerably less.

From a modest beginning, films now play an exceedingly important part in Monarch's overall sales promotion program. A library of movies on turning operations has been built up that ranks as one of the most complete and diversified of its type in the machine tool industry.

### Films are to the point

Each film presents the complete selling story on a specific type of Monarch equipment. There's no gingerbread; no endless and uninteresting tours through the plant, just to add footage. When making a film presentation, it is possible to confine the showing to just one type of machine, or broaden it to include as many as time and the prospect's inclination will permit. Doubtless this practical, down-to-earth approach is largely responsible for the proved effectiveness of Monarch's movie programs.

As an indication of subject scope and treatment, following are capsule digests of Monarch's five sound films:

"The Air-Gage Tracer"—Running time, 23 min. This film covers the latest contributions to the rapidly growing practice of tracer-controlled duplication. It shows a wide variety of typical job applications relating to contour turning, facing and boring as well as multiple-diameter shaft

turning on Monarch engine lathes from 10 to 32 in. equipped with the Air-Gage Tracer. Design features and operational principles of this cost-cutting duplicating device are also discussed.

"The Speedi-Matic"—Running time, 23 min. This is a fast-moving presentation of the production performance of the Speedi-Matic, an electronically-controlled, high-production precision hand screw machine. Typical operational sequences are shown and discussed, along with an illustrated dissertation on the unit's outstanding design features.

### Running time 22 minutes

"The 10 in. Model EE Sensitive Precision Toolmaker's Lathe"—Running time, 22 min. This film is built around those features and principles of the machine which are responsible for its ultra-precision turning, boring and facing in the tool room. This is supplemented by a quick review of specific operations involved in the machining of typical work pieces. In-built precision performance of the unit is clearly seen.

"Mona-Matic Magic"—This is not one, but really two films, each of which takes approximately 18 min runningtime. Presenting numerous diversified turning operations performed with the Mona-Matic lathe, these films spotlight the machine's unusual versatility, which makes it possible to trim costs and accelerate output on so many different tyypes of machining work.

Each of these five films features editing of professional quality. The same holds true of narration, which was done for Monarch by well-known radio announcers and commentators.

Monarch now has six silent films. In this form it is possible to add footage and revise the editing when desirable. Sound will be added to most of these films eventually. In fact, several of them have just about reached this stage.

Movies have come to play a definite—and increasingly important—role in Monarch's sales promotion program, because they produce results economically. They have plainly demonstrated their effectiveness, dollar-wise, by simplifying the sales job, making it easier for Monarch salesmen to get the order in an increasingly large number of cases, thereby reducing overall selling costs.

Viewed in general terms, Monarch uses movies in five ways to tell and sell its turning machine story to industry. First, is showing films to manufacturing executives and production supervisors in plants of prospective purchasers. Such showings are valuable for several reasons.

In larger organizations, often as many as from 30 to 50 men will devote several hours to viewing various Monarch movies. The audience comprises production engineers, tool supervisors and superintendents, methods engineers, master mechanics, plant and work managers, and others concerned with the problems of cost reduction and quality improvement.

A group of this size would seldom find it practical to come to the plant to witness equipment demonstrations, or to visit other plants where such machines are installed. Top executives can rarely find the time necessary for plant visitations but it is rare, indeed, when they cannot get together in their own bailiwick as a group for a movie showing of this nature.

### Over 100 showings so far

The company also puts on film programs before special trade and industrial groups and local chapters of technical societies, such as the ASTE, ASM, engineers' clubs, and foremen's clubs. Over 105 showings of Monarch films have been made before such groups in the past three years.

These programs enable bringing the story of Monarch turning equipment, directly and dramatically, to groups frequently totaling as many as 150 to 200 individuals from as many as 40 to 50 different companies. The beauty of movies



SALES MOVIE in the making at Monarch Machine Tool Co. Only outside member of this team is John Lytle, second from left. Others, from left, are Jack Castle, staff photographer; Ed Martz, in charge of demonstrations; and Frank Pensinger, advertising manager.



FILM EDITING is done by Frank Pensinger, left, and movie adviser John Lytle. Work is done right in Pensinger's office. Same work done outside by professionals would probably cost hundreds of dollars, would still require help of someone intimately familiar with Monarch's tools.

is that it is possible to sales-talk these men at a time when they are free from interruptions which are encountered in their own offices.

At such group meetings an effective sales presentation can be made in a few hours to key men from a variety of industries. It would be well-nigh impossible to duplicate such coverage by making a sales presentation individually to each one; and even if such arrangements could be made, the selling time and cost factors would make such programs prohibitive.

### Used for sales training courses

Again, Monarch finds films excellent for sales training purposes—with its own salesmen as well as with those of its distributors. Though salesmen keep abreast of the firm's turning machine developments and improvements, it is still gratifying to see how often they pick up helpful tips and useful sales pointers from movies.

Monarch also lends its films to technical schools and engineering colleges for class showings. This activity represents a long-range investment in sales promotion, and in prestige and good will building; the returns cannot be evaluated strictly in terms of dollars and cents.

Still another use for films by Monarch is in the preparation of special short films expressly designed to promote the sale of a certain type of machine to a large prospective buyer who wants to be shown a Monarch machine actually performing on work similar to his own particular production-turning problems.

Aside from educational institutions, the distribution of Monarch films is limited to its own sales force and to distributors, both of whom show them before meetings of plant men, trade groups, etc. Each district office is supplied with a projector and a set of prints.

### Lecture accompanies silent films

Distributors are supplied with sound films only. The reason for this is that these films are complete in every respect. Their story in each case is organized, developed and presented, making additional comment unnecessary. With silent movies, of course, a running commentary is required. This is furnished only through trained company representatives.

Monarch has established a system of film report cards which salesmen and distributors fill out and send in after each showing. The comments contained in these reports provide a composite yardstick for gaging the general quality of response. Response has been enthusiastic. Many sales can be directly attributed to movie showings.

Three factors account for Monarch's economical production of films: No expensive field trips; taking of all shots in the company's own plant or demonstration room, and a combination of other favorable circumstances, which in many instances may not be subject to duplication elsewhere.

First and foremost, top management men fully understand the limitless potential of films—many of them are keen camera enthusiasts themselves—and give 100 pct support to every movie project undertaken.

The second basic is a photographic department completely equipped with the proper working tools—lights, extension cords, cameras, viewing and editing equipment, projectors, and so on. Monarch has increased its equipment gradually to a total investment of approximately $3,500. Equally important, of course, are the services of a competent movie cameraman.

Another requisite is planning and direction of the program by someone in the organization who not only knows the product and its features thoroughly, but who also is equally familiar with photography. In Monarch's case, that individual is Frank Pensinger, the advertising manager, who has been actively identified with machine tool advertising and sales promotion for more than 25 years.

### One outside expert helps

The next factor is the collaboration of an independent movie producer, who can be called in on the job when necessary to function as assistant director and take over some of the burdensome, time-consuming production details. He should be able to whip the script into final shape, edit the film, and time the script with the edited film. Also, he should be able to take complete responsibility for adding the sound, doing all final processing and making delivery of the answer print (equivalent to the final proof of a printed advertisement).

In the case of company-sponsored-and-produced films, responsibility for their overall direction inherently lies with the organization itself, not the independent producer. Logically, such direction and coverage of product sales features can come from no other source than the company for whom the film is being produced. The manufacturer knows his product much better than anyone else possibly could.

Finally, after the film is produced and ready for showing, there must be a planned program for the sales or distributor organization to put the film to the most effective use.

In the light of its experience, Monarch regards films as an exceedingly valuable sales tool. They take equipment directly to the prospect. They arouse his interest. They induce him to request a quotation or come to the plant for a more detailed demonstration. Movies always tell and sell the story of Monarch turning equipment completely in the way the company wants it presented—and they do all these things at a cost per contact far lower than is possible by any other method.

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# Standard Presses Form Ribbed Sheets

By R. B. Scott
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**Aluminum sheet with integral stiffening elements is in actual use in aircraft. At Lockheed, standard equipment is being used to form the sheet into wing panels. Special techniques in stretch and compression forming have been used to overcome some of the problems of forming integrally-stiffened sheets. Panels can be formed to precision contours.**

With the usefulness of integrally-stiffened sheet in aircraft construction firmly established, Lockheed Aircraft Corp., under Air Force contract, has concluded a two-part investigation into methods of forming this material for use as wing panels. It was found that upper and lower panels could be formed to precision contours by means of stretch forming. And leading edge panels could be formed by a combination method utilizing stretch forming as a first operation and compression forming or bending as optional second operations.

Other possible methods of forming were also investigated, with negative results. Rubber pad forming was unsuccessful due to variable springback. Rubber pad forming with the ends of the panel restrained as in stretching showed promise, but press capacities of 8000 to 10,000 tons would be required to set part contour. Die forming and roll forming were unsatisfactory, due to varying section modulus of the parts resulting in variations in the final contour of the rolled or die-formed specimen. Bumping was found satisfactory to produce individual specimens, but proved to be too slow and required too much effort to be a good production method.

Full size upper surface integrally-stiffened panels with stiffening ribs parallel to the wing chord were successfully stretch formed in S-W temper in a 1500-ton Clearing double action press. The panels produced conformed to contour and surface smoothness requirements. The unique processes and tooling developed can be produced for a cost equivalent to conventional stretch form tooling of similar size. At the present stage of development, a production rate of about 5 parts per hour per press can be obtained. An eventual rate of 15 per hour per press is foreseen with improved tooling and techniques. Stretch forming was employed as a first operation in a combination method for producing leading edge panels. Full size leading edge panels were successfully stretched to an open contour wherein the full length of the upper and lower surfaces were brought to correct contour and a small segment at the entering edge was left flat. The second and final operation on these leading edges was accomplished by bending.

## Full-size panels formed

Full size leading edge panels were compression formed to excellent contours in the 1500-ton Clearing press. But compression forming alone was not able to remove all buckling resulting from heat treatment prior to forming. So the resultant panels were not satisfactory from a smoothness standpoint. It is felt that the process would operate adequately on leading edge panels comprised of plate or the non-heat-treatable alloys. It is further believed that considerable improvement could be achieved by additional development of tooling employed.

The integrally-stiffened structure used in these tests was produced at Lockheed by milling from plate with a specially-built Cincinnati horizontal milling machine, provided with the Hydrotel duplicating system. In view of the restrictive forming limits of 75S alloy in the heat treated T6 temper, it was decided that all forming operations would be conducted in the freshly-quenched W condition. This meant that all specimens

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Integrally-stiffened sheet (continued)

were machined in the annealed, or O, condition, which almost eliminated problems due to distortion during machining.

Studies of the best design of structure for forming developed certain principles: Tapers of stiffeners and web must be adjusted to maintain nearly constant cross sectional areas. Thick, non-stiffened areas, such as attaching edges and reinforcements for openings, must be of a cross-sectional area roughly equivalent to the average through the stiffened portion of the panel. Taper ratio of stiffeners should be 5:1 or greater. Taper ratio of web should be 20:1 or greater. Specimens incorporating these design ideas were stretched as much as 6 pct, far beyond actual forming requirements, with no sign of failure.

Early experiments in stretch forming of upper wing surface panels established that special tooling was needed to offset the force couple induced by eccentric loading at the stiffener terminations which caused the panel to pull away from the die. It was also found that friction clamping means did not have the necessary capacity for this application. Production of metal stretch dies to the inside contour and configurations of integrally-stiffened panels was impractical by conventional methods.

### Kirksite dies plastic-faced

Dies for the final successful test were made by casting a plastic working face onto a rough contoured Kirksite base. The Rezolin plastic was cast in a 3-in. layer between the base casting and an accurately contoured plaster splash. The resulting composite die had a smooth, accurately contoured face which required no grinding or bluing in. Construction of the mating element of the die set was accomplished in the same fashion, except that the already completed die element was used in place of the plaster splash.

Special gripper rails were made which employed 1-in. square keys as the means of restraining part movement. The part being stretched had 1-in. key slots milled along the parts ends to fit over the keys.

Using the stiffened sheet as a mold, a plastic plate was cast to be used as a filler for the irregular surface of the thin sheet with vertical stiffeners. The necessary clearances for part elongation were provided by affixing sheet wax of predetermined thickness to the areas affected, when casting the plate. This filler plate made it unnecessary to try to provide slots in the face of the die to accommodate the stiffening ribs.

The panel to be formed was heat treated and "dunk" quenched after machining. Some distortion resulted, but not enough to prevent entry into the dies. The panels were then stretched on the Clearing press, using 1490 tons on the main ram, 200 tons on the cushion, and 150 tons on the blankholder ram. A uniform elongation of 2 pct was achieved.

The resulting formed panels had contours and surface smoothness within engineering tolerance for the wing area involved and, in general, were far superior to conventional assembled type sheet metal panels.

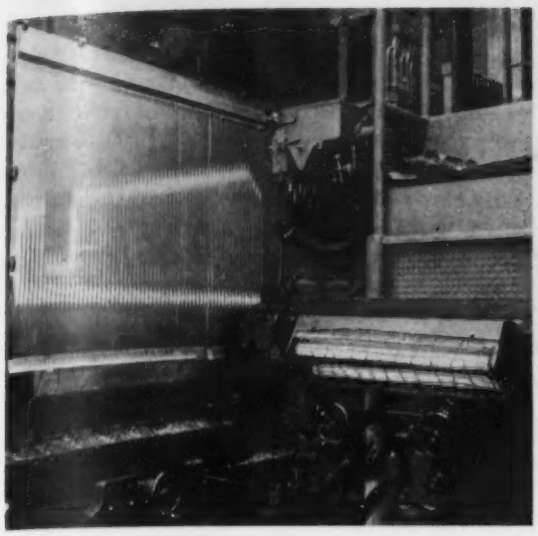
Various limitations made the stretch forming technique seem impractical for production of the wing leading edge panels, although tests on small samples did not rule this method out. The compression forming technique showed more promise. However, it was found that the warpage resulting from heat treatment seriously reduced the effectiveness of the compression forming technique. Further it was indicated that from a weight standpoint it would be desirable to produce leading edge panels with a relatively thin web or skin section at the entering edge. Reducing the web cross section prior to forming would result in all yield occurring in the weakened area and none elsewhere, yet limited access made it impractical to consider reducing this section after the panel had been formed to final contour.

Thus it was decided to form the leading edge in two stages, the first stage employing stretch forming and the second, compression forming. This was accomplished by first stretching the leading edge to an open contour.

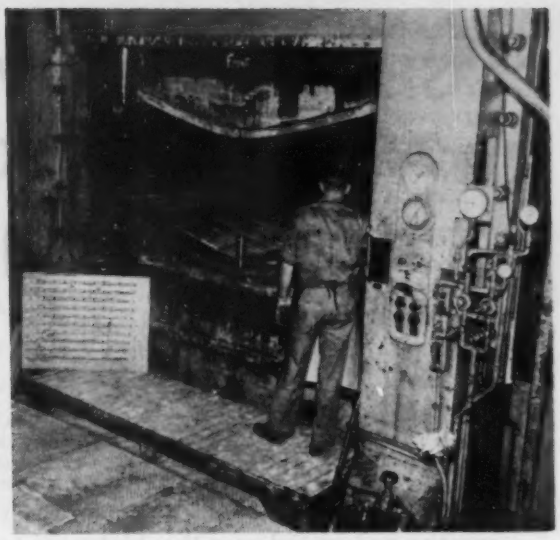
The stretching operation effectively eliminated heat treatment distortion prior to compression forming. Also, it formed all but a small part of the entering edge to final contour. Thus it was possible to mill the entering edge to the



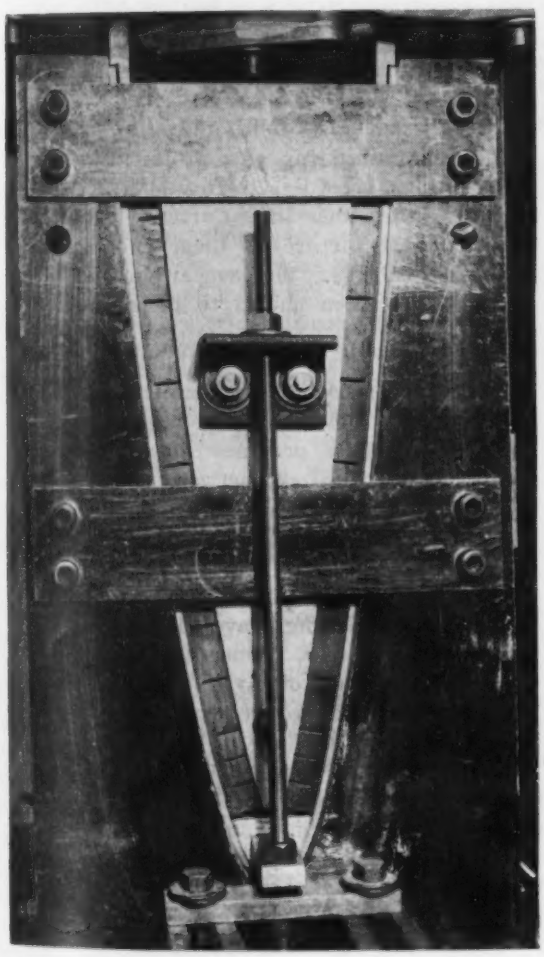
INTEGRALLY-STIFFENED panels for aircraft. Left, leading edge panel. Right, upper wing surface panel.



UPPER SURFACE wing panel being machined on a 168-in. Cincinnati Hydrotel machine at Lockheed. Use of integrally-stiffened panels eliminates many smaller stiffeners and riveting during assembly.



LEADING EDGE PANEL, in first stage: stretch forming. Part, just being ejected from die, is visible at operator's left. Special tooling was needed to offset forces which caused panel to pull away from die. Special gripper rails were used.



COMPRESSION FORMING setup, showing expandable inner structure which holds part against die surfaces. Compressive pressure is applied to sheet at top. Airfoil contour of finished integrally-stiffened part is excellent.

desired reduced thickness between the first and the second operations, at which stage the contour is sufficiently open to permit access.

After the thinning operation, the part was rough bent in a press brake so it could be inserted in the compression dieset. The dieset consisted of welded steel die cage with plastic working face, a punch or compression bar assembly, and an internal support assembly. The internal support assembly included a Cerrobend nose punch, rubber pads to fill the spaces between the stiffeners, and two inflatable thin steel bladders attached to a wedge-shaped punch. The blankholder ram of the press was used with this wedge to restrain the upward expansion of the bladders, so that when 200 psi hydraulic pressure was applied inside them they forced the part into intimate contact with the die.

### Pushing bars used

The part was then formed to 1 pct compressive strain by means of the pushing bars, attached to the main ram and bearing on the edges of the part. The part was then removed, given a solution heat treatment, and refitted in the die. The final compressive set of 1 pct was then applied, with a press load of 600 tons.

Airfoil contour was excellent. As a result of the experience and knowledge gained in performance of this contract, Lockheed has proceeded with confidence to incorporate integrally-stiffened panels in the wings of several production aircraft. Notable are the leading edge on the F-94 fighter and the lower wing panels on the Constellation transport. Most designs for future production models incorporate this type of reinforced panel structure.

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# SHOP PROBLEMS, OPERATING TECHNIQUES studied at AES convention

Practical problems and methods of plant operation and control were the chief subjects of discussions and papers presented at the 38th Annual Convention of the American Electroplaters Society in Buffalo, July 30 through Aug. 2.

Keynote of the meeting was *What is Known About Electroplating?* Only the final session was devoted to the AES Research Program. The forum on Substitute Finishes for Electroplating was one of the most timely meetings held.

Functions common to phosphate coatings and electroplates were described by Alfred Douty, American Chemical Paint Co., Ambler, Pa. Referring to the phosphates, functions were listed as retarding corrosion (under paint, oil or wax, as a top coat); wear resistance; as an aid to drawing or forming (copper deposit); and for decoration, colored and dyed.

### Phosphate coatings discussed

Phosphate coatings are nonconductors of electricity. In this capacity, they may be used for transformer laminations, iron powders for magnetic cores, etc. They may be applied to steel, zinc, chromium and aluminum. Coatings generally available are manganese, zinc, and some iron phosphates. These are usually supplied with addition agents as accelerators.

Applied to steel, the phosphate mixture leaves a deposit of manganese or zinc phosphate, in addition to some iron phosphate resulting from the effect of the material on the base metal. Coating thickness varys from 0.0002 to 0.0006 in. This holds oils, waxes and other nonmetallic coatings. Manganese phosphate is more resistant to abrasives, heat and the attack of alkalis, than zinc phosphate. As an undercoat for paint, the phosphate solution is sprayed on. This gives smoother coats and greater freedom from impurities carried over from the last rinse tank.

For coating zinc or cadmium, a zinc phosphate is used as an undercoat for a subsequent paint finish. A new development is the coating of aluminum with zinc phosphate, as a primary protector alone or with a subsequent paint coat.

Important characteristics of chromate coatings were described by Charles W. Ostrander, Allied Research Products, Inc., Baltimore, Md. These are summarized in the table attached.

Special applications for chromate treatments include such items as zinc plates on steel. The metal is plated, buffed, replated with a bright coat, then treated with a chromate solution and clear lacquer. A high, fine luster resembling chromium results. Parts treated in this way include automobile and electrical equipment. A new development is the application of chromate treatments to wrought, cast or extruded aluminum.

Nickel shortages following rearmament demands has called for new protective materials and coatings, according to Donald R. Meserve of United Chromium, Inc., Carteret, N. J. He presented the picture on Clear and Pigmented Organic Coatings. The copper-chromium combination has been shown to be short-lived in service.

Use of top coats of clear baking synthetics has increased greatly. Specifications for such organic coatings now call for a higher salt spray resistance than is demanded for plated coats. Adherence of baked synthetics to chromium and zinc is excellent. Zinc, if properly polished and treated, resembles chromium in appearance.

### Tinted coatings find favor

Tinted clear coatings have been formulated to resemble gold, brass, copper (over chromium). Other transparent colors include blues, greens and reds. These are replacing some opaque metallic enamels because of better appearance.

Coatings of this type should provide an adequate substitute for conventional plated finishes, and should continue in wide use in normal times.

Rust preventive oils and waxes were described by A. W. Ackerman. These can be removed with a cheap solvent.

Waxes are: (1) fluid applied at room temperature from solvent solutions, forming a thin film on the work; (2) solid, applied hot; (3) in lubricating oils with various addition agents.

Waxes give a highly protective film at low

cost. The same precautions must be observed in applying waxes as in electroplates; work surface must be clean and dry before application. Normal cleaning techniques are satisfactory.

Applications of oils and waxes including perspiration removers, both wet and dry, finger print remover, and wax emulsions were discussed. It is important to guard against staining, choosing the proper preservative for a specific metal. Optimum coating thickness for a specific application should be applied. An important factor is the material used in relation to the type of wrapping used. Special tests for corrosion resistance were discussed.

Several black oxides are offered with the claim they will apply a black coat to any metal, Dr. Walter Meyer said. These coatings generally leave a sulfide deposit which, on steel, may promote corrosion rather than retard it. On exposure to air, the sulfuric oxide, with moisture, forms sulphuric acid which attacks the steel. Sulfide coatings on copper are not injurious.

Treatment of oil and grease films were discussed by Dr. Henry P. Linford, Columbia University, New York. This report, *A New Degreasing Evaluation Test, The Atomizer Test*, covered Project No. 12 of the Research Program of the AES. First a reproducible soil was produced. A test specimen was designed and testing method developed. Conventional rectangular test specimens produced unsuitable films which varied in thickness and consistency.

A new test panel was designed. This consisted of the rectangular portion, 2 x 3 in. below a narrow top, "Z" shaped at right angles to the sheet, all above a triangular tip at the bottom. The submerged portion of the specimen consists of the square center section and the triangular tip at the bottom. Specimens were die cut. The cleaner consisted of sodium orthosilicate 85 pct, sodium carbonate 10 pct, and a wetting agent 5 pct, using 6 oz per gal of water.

The test was essentially one of wetability. Older tests such as water break have long been known to be inconclusive. Water often bridges over very small droplets of oil remaining on the work after cleaning. Equipment included: An ordinary nose and throat atomizer; compressed air free of oil and water; a filter; a mercury manometer for controlling pressure.

The experimental procedure consisted of:

(1) Obtaining a chemically clean surface.

(2) Controlled soiling to obtain a predetermined reproducible soil on the specimen.

(3) Cleaning with the solution noted above.

(4) Drying.

(5) Testing soil remover by the atomizer spray of distilled water with or without dye, for about 30 to 45 seconds; or until a full pattern of remaining oil is developed on the surface.

(6) Measurement of oil droplets in the square center section.

Evaluations were made between the atomizer, fluorescent, spray pattern, ferricyanide and copper sulphate dip tests.

A formula for quantitative comparison of results was developed to determine sensitivity of the testing method. The atomizer test was found most sensitive and showed best reproducibility.

This simple, rapid, and inexpensive testing method may effect great improvement in cleaning methods under production conditions.

Dr. W. Blum of the National Bureau of Standards informally reviewed electroplating research at that institution since 1913.

Types and advantages of electroplating rinses were discussed by R. J. Rominski and F. F. Clifton. Methods of removing harmful water im-

## CHROMATE CONVERSION SOLUTIONS AND COATINGS DATA SHEET

**Chromate solutions and finishes operated at a pH below 7.**

**TYPE I—Simple dip chemical polishing solutions operating at a pH range of 0.0 or less to 1.5 producing lustrous clear to light iridescent yellow coatings of medium corrosion resistance.**

| No. | Operation | Color | Surfaces Applied | Operating Temp. | Immersion Times | Salt Spray on Zinc Plate |
|---|---|---|---|---|---|---|
| 1 | 1 dip | Clear to blue tint | Zinc & cadmium plate | 70° to 100° F. | 5 to 20 sec up to 60 sec | 24 to 100 hr |
| 2 | 1 dip | Yellow iridescent | Zinc & cadmium plate galv., zinc cast | 70° to 100° F. | 5 to 20 sec | 100 to 200 hr |
| 2A | No. 2 using acid or alk. bleach dip | Clear to blue tint, iridescent | Zinc & cadmium plate; some galv. or zinc castings | 70° to 100° F. | 5 to 20 sec | 24 to 100 hr |

**TYPE II*—One-dip non-polishing solutions operating at a pH of 1.0 to 3.5 producing medium to heavy films ranging in color from iridescent yellow to bronze, olive drab and black generally providing maximum corrosion protection.**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 1 dip | Yellow to bronze iridescent | Zinc & cadmium plate galv., zinc castings, aluminum | 60° to 90° F. | 15 to 45 sec<br>Aluminum 10 sec to 3 min | 100 to 200 hr<br>Aluminum 150 to 1000 hr depending on alloy |
| 2 | 1 dip | Olive drab | Zinc & cadmium plate, galv., zinc castings | 70° to 90° F. | 15 to 45 sec | 100 to 500 hr |
| 3 | 1 dip | Black | Zinc plate | 60° to 90° F. | 1 to 5 min | 24 to 100 hr |

*Films, except black, can be dyed with certain alizarine and diazo dyes in red, green, blue and black while still wet during processing.

**TYPE III—Anodic solutions operating at a pH of 2.5 to 6.0 and 5 to 50 amps per sq ft ranging in color to yellow and black.**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Anodic | Yellow | Zinc plate | 70° to 90° F. | 3 to 5 min | 100 to 200 hr |
| 1A | Anodic bleached | Clear to slightly iridescent | Zinc plate | 70° to 90° F. | 3 to 5 min | 50 to 100 hr |
| 2 | Anodic | Black | Zinc plate | 70° to 90° F. | 3 to 5 min | 50 to 100 hr (sealed 100 to 200 hr) |

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purities and the importance of proper rinsing were given.

Ezra A. Blount discussed types and features of diaphragm-tank installations. A survey of diaphragm materials was included.

Methods of heating and temperature control of plating solutions were presented by W. W. Stadel and C. Civan. Factors in the design of heat exchangers, selection of materials, types of temperature-controls and their applications were explained.

A detailed description of a plating sequence in commercial use for finishing automobile bumpers without the use of copper was presented by Donald H. Shantz. The advantages of simplicity in the operation were stressed.

Design of diecastings as a factor in more efficient polishing and plating was stressed by Glenwood J. Beckwith.

The "why" of polishing and buffing operations on diecastings prior to plating were underlined by Maurice R. Caldwell.

Factors affecting electrodeposition as they pertain to the successful electroplating of zinc-base die castings were discussed by C. G. Borlet.

Laboratory methods for evaluating the quality of electrodeposits were described by Carl Durbin. Methods of determining the properties of nickel-chromium coating, including rapid tests available for the production plating shop, were explained.

Techniques of controlling plating baths were described by R. O. Hull and J. B. Winters. Plating bath standards, and analytical and physical controls for each type of bath with time cycles for keeping baths within prescribed limits for good operation were presented. Differences between plants with continuous production and job shop setups were pointed out.

Practical considerations of current distribution were explained by Ralph A. Schaefer and Harry Pochapsky. Application of known concepts of current distribution, and the factors which make up "throwing power" were described.

Advantage of an insoluble anode process for nickel plating of metal strip and wire, for rolls and inside of tubes and for nickel electroforming of screens were described by Dr. W. A. Wesley, Dr. D. S. Carr and E. J. Roehl of The International Nickel Co.

Highlights of the AES Research Program were outlined by Dr. Donald Price. Views on how the plating industry can benefit by research on metal cleaning were presented by E. T. Candee. The abstract nature of much research work, it was pointed out, makes it difficult for management to justify the expense.

# Minimum radii for cold-bending aluminum

| Alloy | Temper | Sheet Thickness, in. | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0.016 | 0.032 | 0.064 | 0.125 | 0.187 | 0.250 |
| 2S | 2S-0 | 0† | 0 | 0 | 0 | 0 | 0 |
| | 2S-H14 | 0 | 0 | 0 | 0 | 0–1 | 0–1 |
| | 2S-H16 | 0 | 0 | 0–1 | ½–1½ | 1–2 | 1½–3 |
| | 2S-H18 | 0–1 | ½–1½ | 1–2 | 1½–3 | 2–4 | 2–4 |
| 3S | 3S-0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 3S-H12 | 0 | 0 | 0 | 0 | 0–1 | 0–1 |
| | 3S-H14 | 0 | 0 | 0 | 0–1 | 0–1 | ½–1½ |
| | 3S-H16 | 0–1 | 0–1 | ½–1½ | 1–2 | 1½–3 | 2–4 |
| | 3S-H18 | ½–1½ | 1–2 | 1½–3 | 2–4 | 3–5 | 4–6 |
| 150S | 150S-0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 150S-H22 | 0 | 0 | 0 | 0 | 0–1 | 0–1 |
| | 150S-H32 | 0 | 0 | 0 | 0–1 | 0–1 | ½–1½ |
| | 150S-H34 | 0 | 0 | 0–1 | ½–1½ | 1–2 | 1½–3 |
| | 150S-H36 | 0–1 | 0–1 | ½–1½ | 1–2 | 1½–3 | 2–4 |
| | 150S-H38 | ½–1½ | 1–2 | 1½–3 | 2–4 | 3–5 | 4–6 |
| 52S | 52S-0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 52S-H32 | 0 | 0 | 0 | 0–1 | 0–1 | ½–1½ |
| | 52S-H34 | 0 | 0 | 0–1 | ½–1½ | 1–2 | 1½–3 |
| | 52S-H36 | 0–1 | ½–1½ | 1–2 | 1½–3 | 2–4 | 2–4 |
| | 52S-H38 | ½–1½ | 1–2 | 1½–3 | 2–4 | 3–5 | 4–6 |

| Alloy | Temper | Sheet Thickness, in. | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0.016 | 0.032 | 0.064 | 0.125 | 0.187 | 0.250 |
| 61S | 61S-0 | 0 | 0 | 0 | 0 | 0–1 | 0–1 |
| | 61S-T4 | 0–1 | 0–1 | ½–1½ | 1–2 | 1½–3 | 2–4 |
| | 61S-T6 | 0–1 | ½–1½ | 1–2 | 1½–3 | 2–4 | 2–4 |
| 24S | 24S-0 | 0 | 0 | 0 | 0 | 0–1 | 0–1 |
| | 24S-T3 | 1½–3 | 2–4 | 3–5 | 4–6 | 4–6 | 5–7 |
| | 24S-T36 | 2–4 | 3–5 | 3–5 | 4–6 | 5–7 | 6–10 |
| 75S | 75S-0 | 0 | 0 | 0–1 | ½–1½ | 1–2 | 1½–3 |
| | 75S-T6 | 3–5 | 4–6 | 5–7 | 6–8 | 6–8 | 7–10 |
| Utility sheet | Produced only in thicknesses of 0.020, 0.025, 0.032, 0.040, 0.051 in. Only guaranteed to take a Pittsburgh lockseam in these thicknesses. | | | | | | |

Compiled by Kaiser Aluminum & Chemical Sales, Inc., Oakland, Cal.

* Minimum radius dimension is tool radius on which bend is made.
† The figure "0" in table indicates sheet can be bent back, 180°, on itself.
NOTE: All forming surfaces should be clean, smooth and free of burrs.

# news of industry

## STEEL EXPANSION—Raise Sights to 124 Million Tons

**That's new aim of official thinking . . . Compares with industry pledges of 118 million, plans for 120 million . . . But NPA slashes steel industry's request for structurals to expand.**

Official thinking in Washington has led to the setting of a new goal for steel ingot production—124,146,000 tons.

This goal is in contrast to a figure of about 118,000,000 tons annually, labelled as the accepted government figure, and the industry total of 120,000,000 tons.

Government personnel expect the new steel tonnage to be reached through normal steel production efforts plus additional activity stimulated by arrangements for fast tax writeoffs.

At the same time, however, producers realize that recent National Production Authority action will defer expansion of secondary production facilities, including rolling mills, through first quarter 1952. Industry's fourth quarter requirements of some 175,000 tons of structural shapes to continue planned growth will not be met. Allocations have been reduced to 90,000 tons, or just more than half the needed amount.

**More Cuts**—The industry's other steel needs for expansion have also been cut sharply for the fourth quarter. NPA estimates that 377,000 tons of carbon steel would be needed to keep the expansion program on schedule. But only 217,000 tons are to be allocated.

Over-all demand for structural shapes, according to a Defense Production Administration spokesman, exceeded projected supply for the fourth quarter by about 220 pct. On the basis of this impressive requirement, those branches of industry which are thought in Washington to be of vital consequence to the defense program are being given first call on supply.

The following criteria have been established in allocating structural steel to the steel industry's expansion program. They are in order of priority:

(1) Facilities of all types now under construction.

(2) Blast furnaces to be finished in 1952.

(3) Steel producing and finishing facilities to be completed this year.

(4) Steel production facilities owned by small business.

(5) All other facilities that will be completed by mid-1952.

Regardless of the decision on deferment of expansion of finishing facilities, NPA spokesmen say there is to be no holdup on the primary steel program. At the same time, the agency says it does not wish to create a bottleneck between primary and secondary activities.

When the plan to hold back steel for secondary plant production was announced, there was a general impression that aims of NPA regarding steel production expansion had been altered. The impression stemmed from official NPA statements before a House Small Business Subcommittee examining the Controlled Materials Plan.

At the same time, it was revealed that expansion of aluminum production would be pushed to the utmost by Washington. This decision was based on the priorities given to aircraft building.

### Defense Personnel Directory

**If you're like most business men you probably have an endless stream of questions pertaining to the defense program and controls.**

**And if you're like most, there have probably been times when you didn't know whom to see, or where to locate him, or how to get his phone number.**

**That's why THE IRON AGE has worked up a Defense Personnel Directory (see insert facing Page 94). By using this directory you'll save lots of time by quickly locating the man you want to see. And you'll find complete details — agency, branch, division, section, building, room, phone and extension.**

### Contract for Copper Exploration

Contributing half the cost, the Defense Minerals Administration has given official blessing to a $568,193 contract made by Calumet & Hecla Consolidated Copper Co., Calumet, Mich., to explore for copper fields in the Upper Michigan peninsula.

The exploration project will take about 2 years. It will mean underground drifting for extensions of presently-developed ore bodies and surface trenching across already discovered lodes.

The government has already entered into 112 contracts involving $7,496,469 for mineral explorations. The program began last April. Contribution of the government will run to 58.8 pct of the total.



TANKS rolling off final assembly line at the Cadillac Cleveland Tank Plant.

# BEANS TO TANKS—Cadillac Builds Bulldogs

**Cadillac delivers first tank 3 months ahead of schedule . . . Labor force now numbers 5600 . . . Celebrate first anniversary . . . Help of 2300 subcontractors enlisted**—*By Bill Taylor*

A year ago Army Ordnance told Cadillac Motors to "get into tank production as soon as possible." Cadillac did and delivered its first Walker Bulldog tank 3 months ahead of schedule.

Recently the Cadillac Tank Plant celebrated its first anniversary. It had a history of haste and industry in its short life. Site of operations is in a World War II bomber plant on the outskirts of Cleveland that in peacetime became a warehouse for 39 million lb of food—mostly beans. The beans made way for thousands of production machines, assembly lines, cranes, and stockpiles of parts.

Driving force of production was a huge labor force of 5600 workers, and a $110 million contract. This was the first major defense order placed with the automotive industry. Today the contract totals about half a billion dollars.

**Welding School**—Since taking over the old plant, experimental facilities have been developed, a service school for army and civilian technicians set up, and an extensive training school where both men and women are schooled in welding homogeneous armor plates. The welding school handles 120 students a day on three shifts, each student spending 3 to 5 weeks before graduating to production work.

In addition there is a 1⅛-mile test track at the plant and an Ordnance proving ground for testing combat vehicles under the most rugged conditions.

More than 2300 subcontractors have contributed to production during this first year. A survey revealed that 66 pct of all tank plant orders went to small businesses. An average of 350 to 400 purchase orders was placed every day. Since last August 17,000 orders went for machine tools and fixtures. Included in these were new machines and surplus, government-owned equipment stored since the last war.

**New Designs**—Specialists worked on the rehabilitation of surplus machinery for immediate use while company engineers worked with machine tool builders to design money-saving machinery. As a result thousands of dollars are being saved every day of production. Machines such as the 350-ton grinding machine made by the Wean Equipment Corp. and a 24-ft Betts Vertical Boring Mill, redesigned by Cadillac and Consolidated Machine & Tool Co. engineers, to extend the side columns of a 12-ft mill for a "swing clearance" of 24 ft, has added production efficiency.

While tooling for the Bulldog was not yet complete, another contract was awarded the plant to build a gun motor carriage. Tooling and production planning for this second vehicle began immediately and now the tank plant continues to grow. New employees are being trained and tank improvements are added and new production techniques utilized.

## Kaiser to Mine Jamaican Bauxite

Construction has been started on about 11,000 acres of bauxite properties on Jamaica, British West Indies, by Kaiser Aluminum & Chemical Corp. to yield 1 million tons of aluminum ore yearly. Shipping distance will be cut down by proximity of Jamaica fields to Kaiser's Baton Rouge, La., alumina plant.

Building a railroad, plant, dock, and adapting Baton Rouge facilities to handle the Jamaican ore will cost about $14,500,000. First big shipments will begin September 1952.

## To Produce Magnesium Again

The Painesville, Ohio, plant of the Diamond Magnesium Co. is again in operation producing magnesium. Peak production by the end of the year is expected.

The government-built plant produced ingots at the rate of 18,000 tons annually during World War II. For security reasons announcement of new production quotas was withheld. The H. K. Ferguson Co., of Cleveland, took over the rehabilitation job for Diamond Magnesium, a wholly-owned subsidiary of the Diamond Alkali Co., Cleveland.



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# JUNK CARS—"New" Source of Needed Scrap?

**Bethlehem goes to the auto graveyard to flatten cars, ship them more cheaply . . . Invites scrap dealers to take over . . . Car yards relieved of heavy scrap jobs**—*By Ted Metaxas.*

Bethlehem Steel Co.'s new method of going to the auto graveyard to slam the rusting hulks with a 2-ton armor plate so that they will ship more cheaply in compact size could have been done before but it wasn't.

Consequently, thousands of automotive hulks lay dormant across the country—either too remote or too costly for scrap salvage. Bethlehem's idea may turn the key to the automotive cemeteries which don't have the labor, the equipment, and, in some cases, the profit incentive to do more than dally with scrap selling.

It has been roughly estimated that bringing out all the jalopies would enrich iron and steel scrap stockpiles by from 5 to 7 million gross tons. Releasing 20 pct could add about 1.5 million tons to scrap stockpiles that have not been fortified for the onslaught of winter production. This super-stimulated source of scrap may help offset the serious depletion of scrap inventory this year.

**"You Finish It"**—THE IRON AGE was told by Bethlehem that it was content to start this movement to the auto junkyards and let the scrap dealers finish the job. The company pointed out that cars smashed down to size could also travel by freight car—not only by trailer-truck, as is the Bethlehem practice in the Allentown, Pa., and Baltimore sections now.

Bethlehem's new process works this way: After field men have come to terms with an auto graveyard, a tractor with crane, and trailer-truck go to the scrap source for on-the-spot preparation. The crane has a 30-ft boom holding a 2-ton armor plate on its magnet. The plate is lifted up and dropped three times atop the hulk. When the last slam sounds, the car has been squashed to a 1-ft thickness—even if the engine has been left inside. Eleven or 12 of these 1-ft "slabs" can be loaded onto the trailer. Less than half that many could be hauled before.

At Bethlehem scrap yards, burners nick the rear end and front of the car. The heavy scrap, rear end, motor, and transmission, drop out neatly. What's left is sheet scrap. It goes into the plate shear and is hashed to strip, which is compressed to charging box size for the openhearth.

**Equipment Inadequate** — Auto graveyards have been glutted with wrecks. They have been stacked one on top of the other. Natural question is: Why hasn't this valuable scrap been moving? First of all, the graveyards are having labor trouble. They can't pay skilled salaries but need quite a crew to separate the light iron from the heavy. The material must be hand cut. Their equipment is usually inadequate. Many have no shears, no cranes, and no hydraulic presses.




Mr. Caruthers from the shipping department insists on seeing you, sir.

Some graveyards were not offered enough money to sell their cars in the controlled market—and the replacement parts business was profitable. They did not care if the cars moved as scrap or not. But their outlook changes when someone offers to pay them a flat rate for each car as it stands in the yard. They are relieved of scrap preparation tasks which they cannot handle. They can strip the valuables off their heaps and clean out their overcrowded yards. And, most important, the profit motive is instilled.

**Resent Intrusion** — What does the scrap trade think of Bethlehem's car salvage program? Some dealers instinctively hate the thought of a scrap consumer going out to get his own material. As businessmen with huge investments, they are justified in that. One of them said, "Scrap men must think of another gimmick to put this business where it belongs."

Bethlehem offers this scrap recovery method to one and all in the scrap trade. It points out that no new investment in equipment is necessary. Cranes and trailers can be leased. The crushed cars can also be shipped by freight cars. If dealers have difficulty staying within the borders of their profit margin, some arrangements should be made with Office of Price Stabilization to liberalize prices of scrap recovered in this way. Since the scrap crisis is nearing a climax this winter, all concerned should be willing to listen to reason.

Finally, Bethlehem warns that a "new" source of scrap was desperately needed. This may be it.

## Tariff Effect on Wood Screws

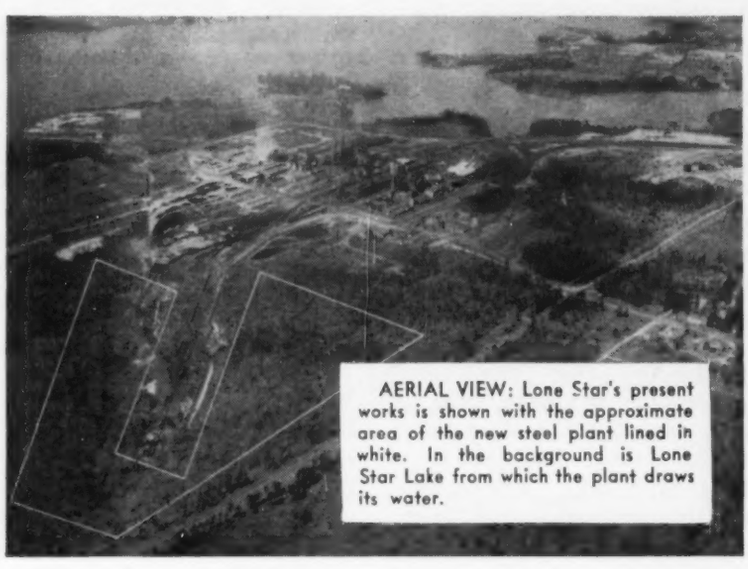
The Tariff Commission has launched an investigation of the effect of lowered tariff rates under the reciprocal trade agreements on the domestic wood screw industry. It will decide later whether to hold a public hearing.

## Non-Essential Producers In Canada Seen Getting Less Steel

Canadian producers of non-essential goods will see the free market in steel shrink when the United States carries through its plan to cut down exports of non-defense steel, said Kenneth Harris, Canada's steel administrator. These non-essential producers must then try to open up other steel sources or appeal to Ottawa.

With the virtual disappearance of free market steel under the American Controlled Materials Plan this fall, Mr. Harris said, defense projects would get American steel under a steel quota but non-essential producers would be hurt. He sees no immediate relief of the shortage in sight.

Canada is getting about 1 million tons of steel annually from the United States. This matches normal imports. But now accelerated industry needs more. Some time ago, C. D. Howe, Production Minister, said Canada could use an additional 800,000 tons.



AERIAL VIEW: Lone Star's present works is shown with the approximate area of the new steel plant lined in white. In the background is Lone Star Lake from which the plant draws its water.

## Clearing the Wilderness

Lone Star Steel Co. has taken another step forward in its program for construction of a fully integrated steel mill. The company has placed an order with United Engineering & Foundry Co., Pittsburgh, for two rolling mills. One is a combination 45 x 80-in., 2-high slabbing and plate mill. Ingots will be broken down into slabs which will then be run through a reheating furnace and back through the mill for rolling into plate.

The hot mill will be a United 27 x 49 x 72-in. four-high reversing hot strip mill with coiling equipment in furnaces on each side of the roll stand. Westinghouse will also furnish the electrical equipment for this mill under the terms of a previously announced contract.

Construction of the steel mill is proceeding on schedule and no delays are expected. Lone Star expects to be making steel in the third quarter of 1952 and pipe by the fourth quarter. Openhearth capacity of the plant will be 500,000 net tons of ingots per year. The four basic openhearth furnaces now being installed will tap around 200 tons each.

## Demand of Steel Industry For Coking Coal Points to Record Use

Continued high demand for coking coal for use in top capacity steel production may bring the total consumption of coal by coke ovens to more than 113,000,000 tons this year, a government official predicts.

Coke ovens now account for about 28 pct of all consumption of bituminous coal, according to Defense Solid Fuels Administrator Charles W. Connor. Anticipating a record year in coke oven consumption, he states that bituminous coal production through mid-August was running at a 9.2 pct rate above that for 1950.

In the fiscal year completed June 30, a record of coke-oven coal consumption was set with a figure of 112,049,000 tons. The previous fiscal-year peak was 110,000,000 tons, set in 1949.

Anthracite production for the year now is more than 27,000,000 tons.

## Auto Association Shapes Up All-Out Scrap Collection Drive

An all-out scrap collection drive spearheaded by a special scrap sub-committee of the AMA has been announced by George W. Mason, president of the Automobile Manufacturers Assn. Other members of the committee include A. J. Campau, General Motors Corp.; C. M. Brown, Studebaker Corp.; A. B. Groff, Hudson Motor Car Co.; Warren M. Huff, Kaiser-Frazer Corp.; A. G. Koepfgen, Nash-Kelvinator Corp.; R. E. Laughna, Ford Motor Co.; W. A. Stickle, Chrysler Corp.

The committee is headed by J. A. LaCourse, Packard Motor Car Co.

A six-point program has been adopted by the scrap committee:

1. A salvage authority or committee with full responsibility for seeking out dormant scrap be appointed by each company.

2. All plants and properties shall be searched for dormant scrap, including obsolete tools



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dies, jigs, fixtures, inactive service parts, etc.

3. Dormant and production scrap shall be disposed of as quickly as possible.

4. Vendors shall be authorized to dispose of obsolete equipment held to company accounts.

5. All scrap shall be carefully segregated.

6. Automobile dealers will be urged to cooperate with local scrap mobilization committee.

## Brooks & Perkins to Build Magnesium Sheet Rolling Plant

A jobbing type mill to roll magnesium sheet from slabs will be built by Brooks & Perkins, Inc., in the northwest suburbs of Detroit. Initial installation will include a hot mill and two cold mills with auxiliary equipment. Production will start in January 1952.

B&P plans to integrate all its operations on the new 10½-acre site later. One of the main reasons for the mill is to effect economies by rolling sheets to exact sizes needed for fabrication. B&P points out that reliance on stock sizes often necessitates as much as 50 pct waste in cutting the blanks.

Shortage of magnesium sheet also enters into the B&P decision to build its own rolling facilities. B&P says sheet scarcity sometimes delays the delivery of some fabricated parts for several months.

## Atomic Powerplant for Sub

Disclosure that the Navy has awarded the Electric Boat Co., Groton, Conn., a contract to build a submarine which can house an atomic powerplant is causing continued speculation that the government's prototype thermal reactor plant is being developed successfully.

Designed by the Argonne National Laboratory at Chicago, the thermal reactor unit is being built for the Atomic Energy Commission by Westinghouse Electric Corp. near Idaho Falls, Ida. Design work was begun in 1948.

# WAREHOUSES—Steel Stocks Sink, Need Help

**Trade paints dark picture of falling stocks as it waits for NPA order to make more steel available . . . CMP will deprive warehouses of free market safety margin**—*By Gene Beaudet.*

Steel consumers dependent on warehouses are going to have an even harder job procuring needed materials in November and December than they have had up to now. Warehouse stocks throughout the country are reaching all-time lows and are expected to go lower. Monthly mill shipments of fast-moving items continue to be shipped out as soon as they are received.

This was the dark outlook painted by the trade as the warehouse industry awaited a new order from the National Production Authority which would make more steel available to them. However, it won't become effective before the first of the year.

**Mill Books Filled**—Since the mills are already booked solid through the fourth quarter no increase in warehouse base period allotments could be fitted into mill schedules any sooner.

By the first quarter of 1952 warehouses are expected to receive 100 pct of the average monthly shipments of carbon steel products they received during the first 9 months of 1950. They are receiving 85 pct of this base.




"All right, Joe. You don't have to quit —we'll put your wife on the night shift."

Actually, during the first half of the year warehouses made out fairly well. During that period their receipts totaled 111 pct of the base period. This was made possible by the fact that from January to May they received mill allotments, in addition to which they were able to pass on DO's to the mills.

**Floor Becomes Ceiling**—Then in May the warehouse order was revised to allow them a minimum tonnage of 85 pct of the base period including DO's. However, under the open-end Controlled Materials Plan this 85 pct was a floor not a ceiling. Most warehouses were able to obtain more tonnage from the free steel area. This arrangement will carry through October.

Now with CMP becoming a closed-end arrangement starting with November, the present 85 pct limitation becomes both a floor and a ceiling and no more free tonnage is available. The only extra steel available would come from excess tonnages produced by the mills. As a result, warehouse receipts for the rest of the year are expected to drop off.

Although there had been some speculation that the forthcoming order would contain a provision enabling warehouses to replace depleted inventories, informed sources claim this has been turned down by NPA. The reason behind the refusal seems to be that NPA is already hard-pressed by other agencies for more steel.

## May Suspend Tungsten Tariff

Import duties on tungsten are slated for suspension, under provisions of a bill (H.R. 5248) now under study in the House.

Ways and Means Committee is planning to hold hearings in the latter part of September on the legislation.

# INDUSTRIAL BRIEFS

**Steel Power**—U. S. Steel has awarded GIBBS & HILL, INC., New York a contract for engineering, design and construction of a 60,000 kw power station at Fairless Works, Morrisville, Pa. They'll also build mains to bring blast furnace gas to power station for fuel.

**Sells Motors**—AJAX ELECTRIC MOTORS CO., 200 Troup St., Rochester, N. Y., has been formed under presidency of David Lipsky for world wide distribution of motors, control equipment and transformers.

**Thor Thunderjets**—THOR CORP. has received a $2 million order from Republic Aviation Corp. to make air frames for F-84 Thunderjets. Thor holds three prime contracts for ordnance parts and has its sights trained on more Air Force production for its plants.

**The Thing**—RIVERSIDE METAL CO. now has available extra copies of its 16 mm industrial film, "Quality Mill." Movie shows modern copper-alloy processing mills.

**Bustin' Out** — STANDARD PRODUCTS CO., Cleveland, will build $1 million plant in Bersailles, Ky., to help work off $7 million backlog of military orders. City is providing plant through municipal bond issues. About 300 will be employed.

**Small Package**—On assignment from U. S. Navy, SOLAR AIRCRAFT CO. has built what it calls the world's first portable, hand-started gas turbine power plant. It was ordered by Bureau of Ships to provide a better method of fighting shipboard fires. But because of its compact power it is believed to have many other military and civilian applications.

**Buys Plant** — AMERICAN RADIATOR & STANDARD SANITARY CORP. has bought Acme Metal Products Corp. and will operate its two plants in Blue Island, Ill., and Dover, N. J., as a wholly-owned subsidiary. Acme makes metal cabinets.

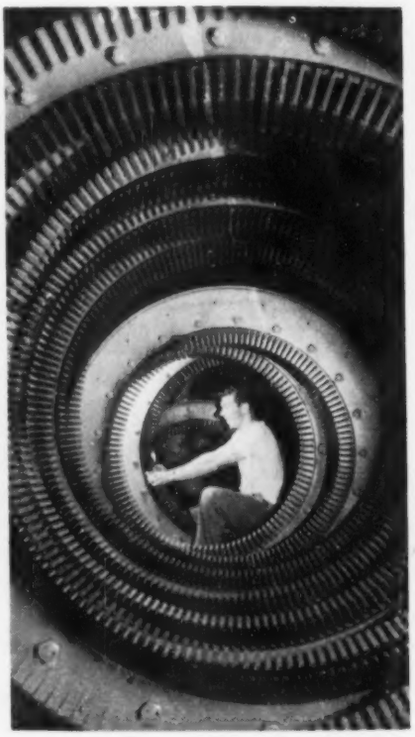
**Aluminum Screens**—Construction of a plant to make aluminum insect screen wire has been started by KEYSTONE LIME WORKS, INC., at Keystone, Ala. Manufacture of special machinery is nearing completion and should be finished by the time the plant is ready.

**High Service** — ELECTRIC EQUIPMENT CO., Rochester, N. Y., offers airplane service to customers who wish to make quick trips to where the company has equipment for inspection.

**Sulfur Bonanza**—While exploring for oil, TEXAS CO. discovered a large new deposit of sulfur on the Mississippi Delta. Deposit will be developed by FREEPORT SULFUR CO. on a 50-50 basis. This largest sulfur development in the world in past 20 years is expected to start producing in 1953.

**Electronics**—First defense production is scheduled to start next week in the new WESTINGHOUSE TELEVISION-RADIO DIV. plant at Metuchen, N. J. It will employ about 50 during first month, 200 by the end of the year. Production will be of "confidential" electronic equipment for Armed Forces.

**Expands for Ordnance** — TOLEDO SCALE CO. is expanding its Ordnance Div. plant by 40,000 sq ft at a cost of $500,000.



INSPECTION: Stator frames for large-sized synchronous motors are inspected at General Electric's Schenectady, N. Y. plant.

**New Furnace**—RUST FURNACE CO. Pittsburgh, will build a new slab reheating furnace for installation at Inland Steel's Indiana Harbor Works. Furnace will be multi-fired reheater of continuous type, and will deliver tons of slabs per hr at 2250° F.

**Openhearths**—LOFTUS ENGINEERING CORP., Pittsburgh, is nearing completion of No. 35 and 36 open-hearth furnaces at Jones & Laughlin's new South Side Plant in Pittsburgh. Eleven 250 ton openhearths are under construction, included in J&L's $20 million expansion program.

**Nonferrous Tubes**—A new plant to produce nonferrous seamless tubing will be built for PRECISION TUBE CO., Philadelphia, by George P. Heebner, Inc. Plant will be located at North Wales, Pa., and will make tubing ranging from 0.500-in. to 0.010-in. O. D.

**Retooling** — METAL FABRICATING CO. is expected to complete retooling for production of armor plate by October. Firm is a subsidiary of Detroit-Michigan Stove Co. It produced more than 20 million lb of armor plate during World War II.

**Mill Equipment**—GENERAL ELECTRIC has received orders totaling more than $3 million from Pittsburgh Steel Co. for its new hot strip mill at Allenport, Pa. Equipment includes 22,000 hp mill drives.

**Plant Purchased**—BARNES MANUFACTURING CO., Mansfield, Ohio, has bought Shasta Pump Co. of Oakland, Calif., and will operate it as a wholly-owned subsidiary. Acquisition will provide new outlet for Barnes on West Coast.

**Facilities Moved** — BRANSON INSTRUMENTS, INC., have moved their facilities to a new plant at 436 Fairfield Ave., Stamford, Conn.

**First of its Kind**—The first aluminum factory in South America will begin operation in Brazil this month. Known as Electroquimica Brasileria, S. A., a majority of its stock is held by ALUMINIO DO BRAZIL, a subsidiary of Aluminum, Ltd., of Canada. Initial output at the mill, which will use local bauxite beds, is reckoned to be 2000 metric tons yearly.



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# NICKEL—"All You Want on the Black Market"

**Washington investigators hear of black market practices . . . One firm could not get enough from its fair market sources and went elsewhere . . . Question DO shipment of the metal.**

One sphere of the nickel market smelled slightly sour to Washington investigators last week. Testimony before watchdogs of the Dept. of Justice, Office of Price Stabilization, and the Senate Small Business Subcommittee alleged that some nickel buying and selling was being conducted in the black market alley. Some witnesses indicated that DO nickel was being diverted to under the counter sales.

It proved that legitimate business in a shortage-stifled nickel market must sometimes be unwilling buyers at over-ceiling prices in order that production processes do not cease. During the 2 days of hearings, Washington ears long inured to tales of legal sidestepping heard among other things that:

In the New York metropolitan area there is "all the nickel you want if you pay a premium price." This price may run as high as $4.50 a lb. Market price, however, stands at a modest 76¢ to 77¢ a lb. Copper cyanide is selling at $1 a lb but the "fair" price is about 60¢.

**Not Enough Nickel**—George A. Williams, of the Small Appliances Div. of General Electric, told the investigators that three suppliers to GE were still selling nickel at fair market prices. Catch is that not enough nickel is available from them. Describing himself as the "emergency supplier" for a number of GE plants, Mr. Williams said he had to pay $4.50 per lb for a 10,000-lb shipment of nickel. This enables his division to continue plating through 1951. At this point, Sen. James H. Duff, R., Pa., member of the subcommittee, told Mr. Williams that paying over the market price is equivalent to dealing in the nickel black market.

Morris Messing, of the Bart Messing Corp., Balfour, N. J., told that Westinghouse Electric Corp. had paid from $3 to $3.50 for "6000 to 7000" lb of nickel.

A. G. Wentworth, vice-president and sales manager of Seymour Mfg. Co., said one shipment of 3500 lb of nickel had been sold to the Flurey Mfg. Corp., Brooklyn, N. Y., at the fair market price. The committee then charged that the nickel shipped to Flurey under a DO order had allegedly wound up in the black market.

**No Special Order?**—A Brooklyn manufacturer said he had paid as much as $3 per lb for nickel from Flurey Co. Another witness was charged as being a "stand-in" for Flurey, working on a commission basis. He refused to answer the question on the constitutional grounds that it might incriminate him.

At present nickel anodes fall under the vague shadow of the General Ceiling Price Regulation. Sen. Moody wondered why no specific pricing order existed for nickel anodes. He said smaller firms were outclassed in the nickel black market because they could not compete with the black market prices larger firms could pay.

The investigation proved a few things—that government allocation methods needed tightening and that black market loopholes and temptations should be sealed up.

## Navy to Improve Ships, Subs At Naval Yards, Electric Boat Co.

Electric Boat Co., Groton, Conn., and ten naval shipyards will handle conversion or modernization of 98 vessels for the Navy's Bureau of Ships.

In addition, Navy project orders call for construction of two minesweepers at Norfolk Naval Shipyard, Va., and two auxiliary motor minesweepers at Mare Island Naval Shipyard, Calif.

The job to be handled by the Electric Boat Co. is the conversion of four conventional-type submarines to meet Guppy requirements. A Guppy sub is snorkel-equipped for extended underwater performance.

Among the larger craft to be modernized are three carriers, the Bon Homme Richard, Hancock, and Lexington. Work on the former will be done at the New York Naval Shipyard. The Hancock and Lexington will be reconditioned at the Puget Sound Naval Shipyard, Wash.



POT HANDLING: A Lorain TL-25J crawler mounted crane with a 36-in. magnet handles two 675-lb annealing pots at one time. The quick method is used by Union Malleable Mfg., Ashland, Ohio. Ordinarily the magnet crane is used to unload scrap, pig iron, and load charging boxes. The switch shows versatility.

# CMP—Steel Men State Their Case Against It

**Congressmen will take another squint at controls on metals when they reconvene . . . Steel men say complete CMP is not needed to cover fractional military effort**—*By Ray Stroupe.*

Congressmen who have been told by steel industry spokesmen that a complete Controlled Materials Plan is unnecessary to support a fractional military effort will take a new look at metals controls, but not until after Sept. 12.

That's the date when the House reconvenes following its vacation. Shortly thereafter, A House Small Business Subcommittee headed by Rep. Burton, D., Va., will hear more discussion of the effects of CMP on small companies.

Testifying on the controls program, G. H. B. Weikel, Bethlehem Steel's manager of commercial research and industrial development, said any attempt to divide that portion of steel production not intended for defense use is futile because of the varying grades and multiplicity of uses for the metal. He described the question of determining who will get what quantities of non-military steel as "too vast" for any single agency to handle.

**Times Are Different**—Steel producers themselves, the Bethlehem representative argued, are accustomed to performing an "equitable job" of placing their output in the hands of people who have sound economic reasons for using steel. There is a difference, he said, in determining requirements during a time of national emergency, such as existed in World War II, and the present period.

One result of imposing CMP now, Weikel asserted, has been the creation of a "whale of a lot of confusion" in the steel industry.

It is now too late to scrap CMP, but its imposition could have been averted some months ago, James L. Hamilton, Jr., sales vice-president of Granite City Steel Co., Granite City, Ill., told the House group. His recommendation, he said, would have been for a single-class priority plan applicable to defense and Atomic Energy Commission needs.

Currently, Hamilton stated, CMP is working "almost as well as could be expected." He warned, however, that fourth quarter allocations of structural steel for expansion within the industry are disappointing, and that Granite City expects some delay in completing work on secondary production facilities.

**Lukens Not Typical**—Normal customers of Lukens Steel Co., many of them in the small business category, are being taken care of fairly well at present, J. F. Wiese, sales vice-president of the Coatesville, Pa. firm, testified to the subcommittee.

Wiese reminded listeners that the impact of CMP on Lukens "cannot be necessarily construed as typical" because of the company's specialized production. Changes in CMP procedure, he said, will help small business.

He reported that Lukens has an $8 million expansion program, with emphasis on steel-finishing facilities. A program for greater ingot production is under study, Wiese added.

## Arraign Ender Corp. President

Arraigned on charges of violating National Production Authority orders by using a DO priority to get excess steel to sell at gray market prices, Jules Levenstein, president of the Ender Mfg. Corp., New York City, was paroled in $5000 bail last week. He pleaded "not guilty." Trial date was tentatively listed as Sept. 10.

NPA representative, Federal Attorney Eugene F. Roth, chief of the Criminal Div., U. S. Attorney's Office, told Federal Judge Edward J. Dimock that NPA considered the case as being of outstanding importance at this time. NPA has indicated that it will press to imprison violators of the code and will not be content with "mere fines" that serve as a go-ahead signal for continued violations.

It is believed that NPA is using the Ender case as a precedent-setter for future prosecution of violators. It is the first court battle involving NPA violations. Successful prosecution of Ender Corp. will also serve notice that NPA means business.

## Industry Controls This Week:

**NPA Orders**

CMP—Metal concrete reinforcing bars will be changed from present Class B to a Class A product, effective Oct. 1.

CMP 1, Amend. 3—Allows manufacturers with controlled materials or Class A products which cannot now be used for permitted purposes to hold those materials for use in other authorized production schedules or to obtain permission to sell them.

Dir. 6, CMP Reg. 1—Manufacturers of Class A products may request customers to make an allotment of materials for orders unless allotments would overstock permissible inventories.

M-25—Operation put on 12-month basis, with allocations of 4,000,000 to 4,400,000 tons of steel for can manufacture planned.

M-50—Advance authorizations of allotments of controlled materials to electrical utilities for first three quarters of 1952.

M-64 — Scrap freight car wheels may now be used only in production of new cast iron car wheels.

**OPS Orders**

CPR 22—Nine special chemicals revert from control under this regulation to control under GCPR.

CPR 61 — Now includes export sales.

CPR 67—Resellers of machinery can hold percentage markup over cost.

CPR 68—Manufacturers of brass mill products must file prices with OPS before Sept. 23.



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The Iron Age DEFENS

**TO BUSINESS MEN: This is YOUR Defense Personnel Directory. It will prove invaluable to you in contacting the people in Washington you want to call or visit. If you don't know whom you should contact on a particular problem, you should look under the columns headed Section and Title. We have tried to make this directory as complete as possible by including building and location, room number and phone and extension number for each defense official. In order to help you keep your Defense Personnel Directory up to date for handy reference THE IRON AGE will list changes as they occur. THE IRON AGE wishes to thank the various defense agencies for their cooperation in making this directory possible.**

## OFFICE OF DEFENSE MOBILIZATION

Executive Office Bldg. EXecutive 3300

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | Director | Charles E. Wilson | 102 | 2101 |
| | Asst. to Dir. | Clay Bedford | 105½ | 2116 |
| | Gen. Counsel | Rodolfo Correa | 178 | 2131 |
| Foreign Supply | Asst. to Dir. | William Y. Elliott | 164 | 2243 |
| Production | Asst. to Dir. | Raymond G. Fisher | 181 | 2182 |
| Manpower | Asst. to Dir. | Arthur S. Flemming | 187 | 2223 |
| Stabilization | Asst. to Dir. | A. E. Howse | 184 | 497 |
| Materials | Asst. to Dir. | David D. Irwin | 105½ | 2057 |
| Staff Director | Asst. to Dir. | Charles B. Stuffacher | 100½ | 2131 |
| Science Advsry. | Chairman | Dr. O. E. Buckley | 159½ | 3563 |
| Public Information | Asst. to Dir. | Andrew H. Berding | 174½ | 471 |
| Information | Asst. Dir. | Scott Hershey | 174½ | 494 |

## DEFENSE PRODUCTION ADMINISTRATION

New GAO Bldg. (Except As Noted) STerling 5200

| Sec. or Div. | Title | Individual | Room | Ext. |
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| | Gen. Counsel | Charles H. Kendall | 4H-16 | 5121 |
| | Spec. Asst. to Adm. | David W. Hoppock | 4A-4 | 4471 |
| | Manage. Asst. | Russell A. Heddleston | 4H-1 | 3858 |
| | Sec. Con. Off. | Richard W. Lawrence | 4I-9 | 5177 |
| | Admin. Officer | William M. Martin | 4I-10 | 3435 |
| | Staff Asst. | Harry Compton | 4A-4 | 4471 |
| | Info. Off. | Charles Schwarz | 3N-1 | 5803 |
| | Office of Program and Requirements | | | |
| | Deputy Admin. | Charles E. Wampler | 4G-7 | 5316 |
| | Asst. to Dep. Adm. | Melvin L. Anshen | 4F-7 | 5313 |
| | Asst. to Dep. Adm. | George N. Lilygren | 4E-7 | 4524 |
| Planning | Director | Glenn E. McLaughlin | 4D-7 | 3148 |
| Program Accounting | Act. Dir. | H. J. Dammeyer | 4C-6 | 5377 |
| Requirements Comm. | Director | R. E. Johnson | 4I-7 | 5313 |
| Military Require. | Director | W. N. Lawrence | 4I-9 | 5425 |
| Foreign Require. | Director | O. R. Johnson | 4I-8 | 5437 |
| Indus. Manpower | Director | Emmett H. Welch | 4I-1 | 5453 |
| Materials Div. | Director | E. H. Merrill | 4D-7 | 4307 |

Defense production administration (continued)

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| Products Div. | Director | Collis Stocking | 4I-10 | 5125 |
| Civilian Require. | Director | John C. Bilby | 4I-11 | 3377 |
| | Office of Resources Expansion | | | |
| Resources Expansion | Act. Dep. Admin. | Byron D. Woodside | 4K-14 | 3919 |
| | Office of Procurement and Production | | | |
| | Deputy Admin. | W. W. Watts | 4B-6 | 3106 |
| | Asst. to Dep. Adm. | A. S. Hawthorn | 4B-6 | 3106 |
| Defense Mobilization | Coordinator | Eugene F. Bertrand | 4B-6 | 3151 |
| Critical Areas | Chairman | Ralph Kaul | 4B-4 | 3738 |
| Small Business Exec. | Chairman | John C. Pritchard | 3310 | 3561 |
| | Office of Staff Service | | | |
| | Act. Dep. Admin. | Nathaniel Knowles | 4C-2 | 3333 |
| | Asst. to Dep. Adm. | M. V. Rosenbloom | 4E-1 | 3333 |
| Materials Review | Director | John D. Morgan, Jr. | 4F-1 | 3223 |
| Conservation | Director | Howard Coonley | 4F-1 | 3401 |
| Reports & Analysis | Director | Nathaniel Knowles | 4C-2 | 3333 |
| Foreign Activities | Director | Frederick Winant | 4G-1 | 5333 |

## NATIONAL PRODUCTION AUTHORITY

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | Dept. of Commerce Bldg. (Except As Noted) STerling 9200 | | | |
| | Administrator | Manley Fleishmann | 5800 | 4161 |
| | Deputy Adm. | Thomas S. Nichols | 5100-A | 4476 |
| | Ind. Adv. Comm. | G. Lyle Belser | 5212 | 5511 |
| | Appeals Board | T. Munford Boyd | 5805 | 3820 |
| | Asst. Adm. for Production Controls | Walter C. Skuce | 5009 | 4111 |
| | General Counsel | John H. Hollands | 5120 | 4331 |
| | Dir. Comp. Div. | John H. Peckham | 2051 Temp. Bldg. T | 4393 |

## METALS AND MINERALS BUREAU

New GAO Bldg. (Except As Noted) STerling 5200

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| | Asst. Adm. | Norman W. Foy | 2D | 335 |

## IRON AND STEEL DIV.

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|---|---|---|---|---|
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| | Deputy Dir. | W. B. Quail | 2H-10 | 328 |
| | Ch. Prod. Dir. Comm. | J. F. Smith, Jr. | 2G-8 | 574 |
| | Ch. Req. Comm. | H. E. Johnson | 2G-1 | 351 |
| | Production and Distribution Branch | | | |
| Alloy Steel | Chief | J. J. Boylan | 2A-5 | 570 |
| Castings | Chief | A. J. McDonald | 2D-6 | 589 |
| Cold Drawn Bar | Chief | E. C. Loester | 2A-6 | 594 |
| Sheet & Strip | Chief | M. B. McCafferty | 2A-1 | 599 |
| Stainless Steel | Chief | J. E. Ewing | 2A-6 | 494 |
| Structural Shapes | Chief | T. E. Dalby | 2A-4 | 401 |
| Tin Plate | Chief | F. A. McClelland | 2C-6 | 500 |
| Tool Steel | Chief | F. Kremp | 2A-6 | 591 |

# DEFENSE Personnel

UNIVERSITY OF MICHIGAN LIBRARIES

Defense production administration (continued)

| Title | Individual | Room | Ext. |
|---|---|---|---|
| ector | Collis Stocking | 4I-10 | 5125 |
| ector | John C. Bilby | 4I-11 | 3377 |
| ffice of Resources Expansion | | | |
| Dep. Admin. | Byron D. Woodside | 4K-14 | 3919 |
| of Procurement and Production | | | |
| uty Admin. | W. W. Watts | 4B-6 | 3106 |
| t. to Dep. Adm. | A. S. Hawthorn | 4B-6 | 3106 |
| rdinator | Eugene F. Bertrand | 4B-6 | 3151 |
| irman | Ralph Kaul | 4B-4 | 3738 |
| irman | John C. Pritchard | 3310 | 3561 |
| Office of Staff Service | | | |
| Dep. Admin. | Nathaniel Knowles | 4C-2 | 3333 |
| t. to Dep. Adm. | M. V. Rosenbloom | 4E-1 | 3333 |
| ector | John D. Morgan, Jr. | 4F-1 | 3223 |
| ector | Howard Coonley | 4F-1 | 3401 |
| ector | Nathaniel Knowles | 4C-2 | 3333 |
| ector | Frederick Winant | 4G-1 | 5333 |

## L PRODUCTION AUTHORITY

| Title | Individual | Room | Ext. |
|---|---|---|---|
| rce Bldg. (Except As Noted) STerling 9200 | | | |
| inistrator | Manley Fleishmann | 5800 | 4161 |
| uty Adm. | Thomas S. Nichols | 5100-A | 4476 |
| Adv. Comm. | G. Lyle Belsey | 5212 | 5511 |
| eals Board | T. Munford Boyd | 5805 | 3820 |
| . Adm. for Pro-ction Controls | Walter C. Skuce | 5009 | 4111 |
| eral Counsel | John H. Hollands | 5120 | 4331 |
| Comp. Div. | John H. Peckham | 2051 Temp. Bldg. T | 4393 |

## LS AND MINERALS BUREAU

| | | | |
|---|---|---|---|
| ldg. (Except As Noted) STerling 5200 | | | |
| t. Adm. | Norman W. Foy | 2D | 3351 |

## IRON AND STEEL DIV.

| | | | |
|---|---|---|---|
| w GAO Bldg. STerling 5200 | | | |
| ector | R. F. Sentner | 2H-8 | 4346 |
| uty Dir. | W. B. Quail | 2H-10 | 3281 |
| Prod. Dir. | | | |
| omm. | J. F. Smith, Jr. | 2G-8 | 5748 |
| Req. Comm. | H. E. Johnson | 2G-1 | 3510 |
| luction and Distribution Branch | | | |
| of | J. J. Boylan | 2A-5 | 5705 |
| of | A. J. McDonald | 2D-6 | 5891 |
| of | E. C. Loester | 2A-6 | 5949 |
| of | M. B. McCafferty | 2A-1 | 5991 |
| of | J. E. Ewing | 2A-6 | 4944 |
| of | T. E. Dalby | 2A-4 | 4011 |
| of | F. A. McClelland | 2C-6 | 5008 |
| of | F. Kremp | 2A-6 | 5916 |

Iron and steel div. (continued)

| Sec. or Div. | Title | Individual |
|---|---|---|
| Tube | Chief | J. S. Anderson |
| Warehouse | Chief | R. Link |
| Wire | Chief | N. F. Melville |
| Forgings | Chief | H. F. Weaver |
| Pipe | Chief | C. T. Hapgood |
| Plate | Chief | E. D. Bickford |
| | Metallurgical and Conservation Branch | |
| | Asst. Dir. | E. J. Hergenroether |
| | Ferroalloys and Metals Branch | |
| | Asst. Dir. | J. H. Critchett |
| Ferroalloys | Chief | F. F. Franklin |
| Nickel | Chief | H. Larsen |
| Tungsten & Molybdenum | Chief | S. Schein |
| | Facilities and Raw Materials Branch | |
| | Asst. Dir. | R. J. Wyser |
| MRO | Chief | F. A. Weidman |
| Pig Iron | Chief | J. A. Claussen |
| Plant & Facilities | Chief | H. L. Leyda |
| Refractories & Fluxes | Chief | Mrs. M. M. Savers |
| Scrap | Chief | M. S. Plant |

## ALUMINUM AND MAGNESIUM DIV.

New GAO Bldg. STerling 5200

| Sec. or Div. | Title | Individual |
|---|---|---|
| | Director | N. H. Bell |
| | Deputy Dir. | T. A. Lynch |
| | Magnesium Branch | |
| | Chief | Perry Helser |
| Requirements & Distribution | Chief | A. M. Dinkfeld |
| Castings | Chief | Dr. Anderson |
| | Products Branch | |
| Ingot & Scrap | Chief | Conral Briel |
| Extrusions | Chief | Harold Beebe |
| Sheet, Plate & Foil | Chief | Robert Farrell |
| Powder | Chief | Charles Luke |
| Rob, Bar, Wire & Forgings | Chief | W. V. Gilbert |
| Castings | Chief | Lloyd Mapes |
| | Requirements and Distribution Branch | |
| | Chief | Connor Batman |
| Air Force | Chief | George Mahoney |
| Army | Chief | A. M. Martin |
| Navy | Chief | E. W. Digge-LaTouche |
| For. Chem. & Rub. | Chief | Richard Taylor |
| Indus. & Agri. Equip. | Chief | Lawrence Moyer |
| Tex. Leather & Spec. | Chief | J. Medley |
| Other Claimant Agencies | Chief | R. Heffernan |
| | Program and Statistics Branch | |
| | Chief | S. M. Blumenreich |
| | Conservation and Order Administration Branch | |
| | Chief | Herbert Cullen |

# el Directory

| dual | Room | Ext. |
|---|---|---|
| son | 2D-4 | 5439 |
| | 2B-6 | 3050 |
| lle | 2B-6 | 3420 |
| er | 2C-6 | 3004 |
| ood | 2D-4 | 4038 |
| ord | 2D-4 | 4947 |
| Branch | | |
| enroether | 2H-9 | 4868 |
| ch | | |
| nett | 2H-9 | 4795 |
| klin | 2L-8 | 3756 |
| | 2K-9 | 4681 |
| | 2L-9 | 4695 |
| anch | | |
| r | 2H-11 | 3960 |
| man | 2K-9 | 4939 |
| sen | 2M-10 | 3026 |
| a | 2M-9 | 3934 |
| . Savers | 2K-10 | 4017 |
| t | 2M-10 | 3782 |

**M DIV.**

200

| dual | Room | Ext. |
|---|---|---|
| | 2N-1 | 5630 |
| n | 2N-1 | 5632 |
| | | |
| | | |
| er | 2L-1 | 5520 |
| feld | 2M-2 | 4708-5844 |
| | | |
| on | 2K-2 | 5844 |
| | | |
| el | 2I-4 | 4449 |
| be | 2J-1 | 4744 |
| rell | 2J-1 | 3066 |
| ke | 2J-4 | 4928 |
| rt | 2J-1 | 4744 |
| | | |
| es | 2J-1 | 4718 |
| ranch | | |
| man | 2N-1 | 3778 |
| honey | 2K-1 | 4736-5036 |
| in | 2J-1 | 5550 |
| e-LaTouche | 2J-1 | 4742 |
| ylor | 2J-1 | 5550 |
| Moyer | 2J-3 | 5910 |
| | 2J-3 | 4752 |
| n | 2J-1 | 3066 |
| ch | | |
| enreich | 2M-1 | 3597 |
| on Branch | | |
| llen | 2L-2 | 3971 |

## LOCATION OF BUILDINGS

| | |
|---|---|
| Dept. of Commerce Bldg. | 14th St. & Independence Ave., SW |
| Dept. of Interior Bldg. | C St. between 18th & 19th St., NW |
| Executive Office Bldg. | 17th St. & Pennsylvania Ave., NW |
| ICC Bldg. | 12th St. & Constitution Ave., NW |
| New GAO Bldg. | 5th & G Sts., NW |
| Temporary Bldg. E | 4th St. & Adams Drive, SW |
| Temporary Bldg. S | Jefferson Dr. near 6th St., SW |

Aluminum and magnesium div. (continued)

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | | **Facilities Branch** | | |
| | Chief | Harry Scott | 2J-2 | 4713-3610 |
| Sheet & Plate | Chief | Baily Byars | 2J-3 | 3610-4713 |
| Wire, Rod & Bar | Chief | John Thompson | 2J-3 | 4713-3610 |

## COPPER DIV.

New GAO Bldg. STerling 5200

| | | | | |
|---|---|---|---|---|
| | Director | F. H. Hayes | 2H-15 | 3318 |
| | Deputy Dir. | J. W. Mullally | 2H | 3275 |
| | | **Wire Mill Branch** | | |
| | Chief | G. E. Rolston | 2H | 5924 |
| | Asst. Ch. | M. O. Porter | 2H | 5428 |
| Allocation | Chief | F. Spitale | 2H | 4924 |
| Program | Chief | A. H. Gould | 2H | 5428 |
| Components | Chief | L. W. Eighmy | 2H | 5076 |
| Production & Facilities | Chief | C. Ange | 2H | 5463 |
| Warehouse | Chief | W. Dyer | 2H | 3989 |
| | | **Brass Mill Branch** | | |
| | Chief | Paul B. Andrews | 2H | 4920 |
| | Asst. Ch. | L. C. Chew | 2H | 3943 |
| | Asst. Ch. | P. W. Taylor | 2H | 5403 |
| Allocation | Chief | L. O. Thompson | 2H | 4925 |
| Production & Scheduling | Chief | W. Ashlock | 2H | 5973 |
| Facilities & Components | Chief | N. Blakely | 2H | 4926 |
| Technical | Chief | H. Bedworth | 2H | 5468 |
| Warehouse | Chief | L. C. Chew | 2H | 3943 |
| Program | Chief | J. O'Connor | 2H | 5468 |
| | | **Foundry Branch** | | |
| | Chief | Lt. Com'dr W. A. Meissner, Jr. | 2H | 5429 |
| | | R. Shannon | 2H | 3970 |
| | | R. Varndell | 2H | 3970 |
| | | **Copper Raw Materials Branch** | | |
| | Chief | M. L. Trilsch | 2H | 5404 |
| Scrap | Chief | C. F. Williams | 2H | 5069 |
| | Asst. Program Off. | W. E. Bradford | 2H | 4614 |
| Conservation | Chief | L. T. Bonner | 2H | 4607 |
| Statistics & Reports | Chief | G. Haycraft | 2H | 4724 |
| Orders & Regulations | Chief | H. A. Barron | 2H | 4923 |
| CMP & Program | Chief | James Forman | 2H | 4608 |

## TIN, LEAD AND ZINC DIV.

New GAO Bldg. STerling 5200

| | | | | |
|---|---|---|---|---|
| Lead Branch | Acting Ch. | Arthur J. Cavanaugh | 2H-1A | 3430-3930 |
| Tin Adjustments | | Edward L. Hogan | 2F-2 | 3240 |
| Zinc & Cadmium Adj. | | Margaret B. Murphy | 2E-2 | 3015 |
| Lead, Antimony, Bismuth Adj. | | Edwina Parkinson | 2E-2 | 5484 |
| Tin | Chief | William L. Raup | 2F-1B | 3166-7 |
| Program | Chief | Herbert O. Rogers | 2G-1A | 3198-5436 |
| Zinc | Chief | John Sellon | 2G-1B | 4022-5087 |

## MISCELLANEOUS METALS AND MINERALS DIV.

New GAO Bldg. STerling 5200

| | | | | |
|---|---|---|---|---|
| | Acting Dir. | H. B. Sharpe | 2A-2 | 5361 |
| Selenium | | George C. Branner | 2B-2 | 5079 |
| Asbestos, Fibers, Textiles & Fibrous Glass | Chief | Ray H. Coultrap | 2B-2 | 5079 |
| Asbestos | Chief | Henry H. Crowell | 2B-2 | 5079 |
| Industrial Diamonds | Chief | Marguerite Dotye | 2B-2 | 5079 |
| Mica | Chief | Alexander H. Jeffries | 2B-2 | 5079 |
| General Analyst | Chief | Mrs. Mary Lubig | 2B-2 | 5068 |
| Fluorspar | Chief | Samuel H. Manian | 2B-2 | 5084 |
| Artificial Graphite | Chief | A. B. Oatman | 2B-2 | 5079 |
| Clays | Chief | Donald S. Phelps | 2B-2 | 4927 |
| Asbestos Bldg. Mat. | Chief | Carlton E. Roxborough | 2B-2 | 5079 |
| Natural Graphite | Chief | Valentine C. Smith | 2B-2 | 5079 |
| Program & Statistics | Chief | John E. Steinhauer | 2B-2 | 3091 |

## OFFICE OF PRICE STABILIZATION

Temporary Bldg. E. STerling 4200

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | Director<br>Temporary Bldg. S | Michael V. DiSalle | H-383 | 3215 |
| | Industrial Materials and Manufactured Goods Div. | | | |
| | Director | Murray D. Smith | 2067-S | 3132 |
| | Asst. Dir. | John M. Bulkley | 2067-S | 3133 |
| | Asst. Dir. | Sam M. Ewing | 2059-S | 4989 |
| | Admin. Off. | William F. Hagan | 1053-S | 6273 |
| | Div. Econ. | Charles W. Moore | 2055-S | 5843 |
| | Automotive Branch | | | |
| | Chief | W. LeRoy Jordan | 1052-S | 8884 |

Office of price stabilization (continu

| Sec. or Div. | |
|---|---|
| Passenger Car | Chi |
| Parts & Accessories | Chi |
| Truck & Trailer | Chi |
| Aircraft | Chi |
| Marine | Chi |
| | Ac |
| Roofing & Insulation | Ac |
| Masonry Materials | Ch |
| Hardware & Misc. Prod. | Ac |
| Prefab. Structures | Chi |
| Mechanical Bldg. Equip. | Ac |
| Con. & Dis. | Chi |
| | Chi |
| Auxiliary Machinery | Chi |
| Con., Min. & Quarry. Mchry. | Chi |
| Cut. Tools & Indus. Sup. | Chi |
| Elec. Mchry. & Power Equip. | Chi |
| Farm Mchry. & Equip. | Chi |
| Gen. Indus. Mchry. | Chi |
| Mchne. Tools (new & used) | Chi |
| Metals Extrac. & Fab. Mchry. | Ac |
| Trans., Mat. Handl. & Instr. | Ch |
| | Ch |
| Iron & Steel Products | Ch |
| Copper & Brass | Ch |
| Lead, Tin & Zinc | Ch |
| Castings & Forgings | Ch |
| Light Metals | Ch |
| Scrap Iron & Steel | Ch |
| Misc. Metals & Minerals | Ch |
| Fabricated Products | Ch |

# nse Personnel Directory—continued

ilization (continued)

| | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | Chief | Kirk A. Metzerott | 1403-S | 8879 |
| ries | Chief | Vacant | | |
| | Chief | Vacant | | |
| | Chief | Vacant | | |
| | Chief | Vacant | | |

**Building Materials Branch**

| | | | | |
|---|---|---|---|---|
| | Acting Ch. | Walter H. Acheson | 2533-S | 3502 |
| tion | Acting Ch. | Donald Linville | 2538-S | 3119 |
| als | Chief | Vacant | 2536-S | 6538 |
| sc. Prod. | Acting Ch. | William J. Wiley | 2538-S | 3119 |
| es | Chief | Vacant | | |
| . Equip. | Acting Ch. | Richard C. Cook | 2536-S | 3118 |
| | Chief | Thomas G. Letchworth | 2540-S | 8026 |

**Machinery Branch**

| | | | | |
|---|---|---|---|---|
| | Chief | Leslie J. Carson | 2526-S | 6534 |
| nery | Chief | Warren B. Leland | 2506-S | 8887 |
| uarry. | | | | |
| | Chief | Arthur F. Loder | 2518-S | 8880 |
| us. Sup. | Chief | Edward L. Norman | 2510-S | 8976 |
| Power | | | | |
| | Chief | Harold M. Jalonack | 2520-S | 8889 |
| Equip. | Chief | Archie A. Stone | 2504-S | 2291 |
| ry. | Chief | William F. Earls | 2524-S | 5533 |
| new & | | | | |
| | Chief | Vacant | | |
| & Fab. | | | | |
| | Acting Ch. | Alec M. Sheard | 2516-S | 8886 |
| ndl. & | | | | |
| | Chief | Lawrence W. Wallace | 2514-S | 3519 |

**Metals Branch**

| | | | | |
|---|---|---|---|---|
| | Chief | William Kerber | 2503-S | 5108 |
| ducts | Chief | Walter H. Dupka | 2505-S | 4610 |
| | Chief | Arthur F. Norling | 2513-S | 8095 |
| | Chief | Charles C. Rieth | 2505-S | 8446 |
| ings | Chief | Edward J. Metzger | 2511-S | 5228 |
| | Chief | William N. White, Jr. | 2517-S | 3236 |
| eel | Chief | Max Schlossberg | 2519-S | 8236 |
| Minerals | Chief | Joseph C. Ewinem | 2517-S | 8892 |
| ucts | Chief | Howard H. Needham | 2509 | 4395 |

## DEFENSE MINERALS ADMINI

Dept. of Interior Bldg. REpubli

| Sec. or Div. | Title | Indivi |
|---|---|---|
| | Administrator | James Boy |
| | Exec. Secretary | Landon F. |
| Information | Director (acting) | Allan Sher |
| Supply | Director | Tom Lyon |
| Production expansion | Director | C. O. Mitte |
| Foreign | Chief | Thomas C. |
| Requirements | Director | Harold A. |

## DEFENSE TRANSPORT ADMIN

Interstate Commerce Commission Bldg.

| Sec. or Div. | Title | Indivi |
|---|---|---|
| | Administrator | James K. K |
| | Dep. Admin. | Homer C. F |
| | Exec. Asst. | W. S. Rain |
| | Gen. Counsel | Francis A. |
| | Admin. Officer | Clarence B |
| | Info. Officer | Charles S. |
| Equip. & Materials | Director | F. Berkeley |
| Inland Water Trans. | Director | Paul L. Tie |
| Manpower | Director (acting) | Samuel L. |
| Port Utilization | Director | Elmo E. Fe |
| Railroad Transport | Director | George H. |
| St. & Highway Trans. | Director | Henry E. E |
| Warehousing & Storage | Director | Harold K. |
| Tax Amortization & Defense Loan | Chief | Robert R. I |

## PETROLEUM ADMIN. FOR

Dept. of Interior Bldg. REpubli

| Sec. or Div. | Title | Indivi |
|---|---|---|
| | Inter. Sec. & Petrol. Administrator | Oscar L. C |
| | Deputy Admin. | Bruce K. B |
| | Asst. Dep. Admin. | Hugh A. S |
| | **Domestic Industry Operation** | |
| | Asst. Dep. Admin. | Alfred P. F |

UNIVERSITY OF MICHIGAN LIBRARIES

## STRATION
· 1820

| lual | Room | Ext. |
|---|---|---|
| d | 4614 | 4815 |
| Strobel | 4623 | 2210 |
| man | 2611 | 3337 |
| | 3612 | 3433 |
| ndorf | 4640 | 5371 |
| Baker | 3614 | 3405 |
| Montag | 2465 | 2670 |

## ISTRATION
REpublic 7500

| lual | Room | Ext. |
|---|---|---|
| nudson | 4134 | 6516 |
| ing | 4134 | 6403 |
| ville, Jr. | 5410 | 5833 |
| Silver | 5311 | 5274 |
| arker | 5108 | 3513 |
| Baxter | 1116 | 6309 |
| Robins | 4117 | 2295 |
| tjen | 4123 | 3417 |
| Newman | 4217 | 4536 |
| rrari | 3430 | 8023 |
| Minchin | 5310 | 8801 |
| nglish | 4133 | 2113 |
| Osgood | 3430 | 4447 |
| Iendon | 1210 | 5262 |

## DEFENSE
: 1820

| lual | Room | Ext. |
|---|---|---|
| iapman | 6151 | 704 |
| rown | 6512 | 3831 |
| tewart | 6521 | 4164-65 |
| s | | |
| rame | 6516 | 3891-3892 |

Petroleum admin. for defense (continued)

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | **Production Division** | | | |
| | Director | Richard G. Lawton | 2557 | 4934 |
| | **Natural Gas Production & Processing Division** | | | |
| | Director | Charles E. Webber | 6441 | 2967 |
| | **Refining Division** | | | |
| | Director | Reid Brazell | 6459 | 5343-44 |
| | **Supply & Transportation Division** | | | |
| | Director | George A. Wilson | 5251 | 2797 |
| | **Operations Service Division** | | | |
| Trans. Materials | Chief | O. M. McClatchey | 2056 | 5352 |
| Projects | Chief | Lloyd O. Zapp | 2023 | 3426 |
| Program | Director | Cecil L. Burrill | 6458 | 2728-3094 |
| | **Gas Operations** | | | |
| Gas Facilities | Director | Louis C. Sonnen | 6648 | 3924-3946 |
| Gas Planning | | Walter E. Caine | 6527 | 5360 |

## EMERGENCY PROCUREMENT SERVICE
Seventh and D Streets SW. REpublic 7500

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | Commissioner | A. J. Walsh | 7132 | 2243 |
| Purchase | Director (acting) | H. C. Maull, Jr. | 3002 | 2672 |
| Rubber | Director | J. B. Ingle | 3110 | 6178 |
| Research & Develop. | Director | Tom V. Wilder | 7008 | 6356 |
| Storage & Transpor. | Director | J. E. Salisbury | 3028 | 3432 |
| Administrative | Officer | H. C. Cleveland | 7124 | 4691 |

## NATIONAL SECURITY RESOURCES BOARD
Executive Office Bldg. STerling 4700

| Sec. or Div. | Title | Individual | Room | Ext. |
|---|---|---|---|---|
| | Act. Chairman | Jack Gorrie | 206 | 3311 |
| | Spec. Asst. | Robert O. Renville | 204 | 3242 |
| | Spec. Asst. | Tom Yarbro | 305 | 3245 |
| | Gen. Counsel | James L. Kunen | 202 | 3431 |
| | Program Asst. | Dal Hitchcock | 200½ | 3212 |
| | Econ. Adviser | Oscar Embler | 302 | 3358 |
| Special Security Meas. | Director | Ethan Allen Peyser | 302 | 3358 |

*Continued*

## DEFENSE CONTRACTS

Week of August 27, 1951

Teletypewriters—Teletype Corp., Chicago
Hammers—Syntron Co., Homer City, Pa.
Spare parts—Pioneer Electric Co., Los Angeles
Spare parts—Caterpillar Tractor Co., Peoria, Ill.
Spare parts—Wayne Mfg. Co., Pomona, Calif.
Spare parts—Athey Products Corp., Chicago
Sand grader—J. D. Amams Mfg. Co., Indianapolis
Refrigerator—Amana Refrigeration Inc., Amana, Iowa
Refrigerator—Hussman Refrigerator Co., St. Louis
Crane—Koehring Co., Port Hueneme, Calif.
Gages, tool—Industrial Precision Products, Chicago
Refrigerator—King Refrigerator Corp., Glendale, N. Y.
Engine parts—Baldwin-Lima-Hamilton Corp., Hamilton, Ohio
Freezers — Kelvinator Div., Nash-Kelvinator Sales Co., Washington
Lathe—Hendey Machine Co., New York
Tractors—Crescent Truck Co., Lebanon, Pa.
Lathe—Springfield Machine Tool Co., Springfield, Ohio
Lathe—American Tool Works Co., Cincinnati
Rivet tool—Cherry Rivet Co., Los Angeles
Lathe—Axelson Mfg. Co., Los Angeles
Lockers—C. A. Olsen Mfg. Co., Elyria, Ohio
Machine, electroplating—Hanson-Van Winkle-Munning Co., Matawan, N. J.
Hammer—Ingersoll-Rand Co., Washington
Spare parts—Western Electric Co., New York
Light—Graflex, Inc., Rochester, N. Y.
Spare parts—Graflex, Inc., Rochester, N. Y.
Repair parts—Cleaver-Brooks Co., Milwaukee
Repair parts—Allis-Chalmers Mfg. Co., Milwaukee
Repair parts — Reliance Electric Engineering Co., Cleveland
Repair parts—Korfund Co., Inc., Long Island City, N. Y.
Repair parts—Bacharach Industrial Instrument Co., Pittsburgh
Float—National Steel Construction Co., Seattle
Minesweeper—Pacific Boatbuilding Co., Tacoma, Wash.
Minesweeper — Martinolich Shipbuilding Co., San Diego, Calif.
Hose — John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.
Food-mixing machine—Century Machine Co., Cincinnati
Dishwashing machine—Champion Dish Washing Machine Co., Erie, Pa.
Heaters—Lonergan Mfg. Co., Albion, Mich.
Refrigerators—Barker Bros. Corp., Los Angeles
Tank parts—Detroit Aluminum & Brass Corp., Detroit
Hardware—Sunbury Wire Rope Sales Co., Inc., New York
Tank parts—Schultz Bros., Inc., Saginaw, Mich.
Misc. parts—M-D Parts Mfg. Co., Los Angeles
Misc. tools—Dockson Corp., Detroit
Case—Telegraph Machine & Tool Co., Pontiac, Mich.
Tank parts—American Blower Corp., Detroit
Tank parts—U. S. Motor Truck Sales, Detroit
Jig—Rudel Machinery Co., Inc., New York
Holding fixtures—Downington Mfg. Co., Downington, Pa.
Boring machine—Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn.
Mixer—E. A. Kinney Co., Cincinnati
Telephone switchboard — Kellogg Switchboard Supply Co., Chicago
Plow—Universal Engineering Co., Cedar Rapids, Iowa
Reel unit—Dickie Tool Co., Downers Grove, Ill.
Terminal box—A. C. Gilbert Co., New Haven, Conn.


Need Hydrogen?

GET DU PONT "NATIONAL"®

Anhydrous Ammonia

IN CYLINDERS

Minimum 99.99% ammonia...YET IT COSTS NO MORE!

Every cylinder is tested!

If you need hydrogen to provide inert atmospheres for metal treating, dissociate Du Pont "National" Anhydrous Ammonia. It is minimum 99.99% ammonia. You get it at no extra cost! It's always dry—moisture content is less than 50 parts per million. What's more, "National" ammonia in cylinders is readily available. Distributors and stock points are located across the country . . . assure speedy delivery.

Do you know these other Du Pont chemicals for metal treating?

**HYDROXYACETIC ACID 70%**—For bright dipping of copper, electro-polishing of stainless steel and electroless plating of nickel.

**METHANOL**—Source of hydrogen and carbon monoxide for an efficient reducing atmosphere in many metallurgical operations, and for cleaning of metal parts during fabrication.

Product information on these and other chemicals is available. Please write on your letterhead to: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Delaware.

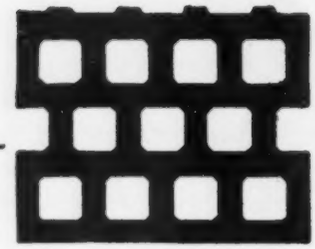
DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

POLYCHEMICALS DEPARTMENT

350 Fifth Avenue, New York 1, N. Y. 7 S. Dearborn Street, Chicago 3, Ill.
818 Olive Street, St. Louis 1, Missouri

# Perforated metal screens



*for any requirement*

WITH facilities for producing any shape and size of perforations in any commercially rolled metal, of whatever gauge desired, Hendrick can furnish the most suitable form for a specific screening application.

To best meet certain requirements, Hendrick developed the "squaround" perforation illustrated. Other standard forms include round, square, hexagonal, diamond and slot perforations in hundreds of sizes of openings. Write for full information.

1876—Seventy-fifth Anniversary—1951

SEE OUR CATALOG IN SWEET'S

**HENDRICK**

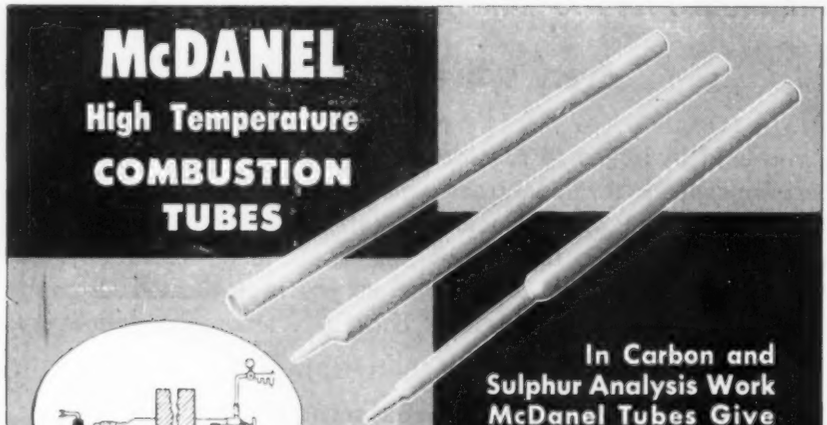
*Manufacturing Company*

37 DUNDAFF STREET, CARBONDALE, PENNA.

*Sales Offices In Principal Cities*

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

**McDANEL**
**High Temperature**
**COMBUSTION TUBES**



In Carbon and Sulphur Analysis Work McDanel Tubes Give All-Out Service.

Non-porous, gas-tight and highly refractory, McDanel Tubes never spall or blister. They stand up under thermal shock and have low coefficient of expansion. 30 years of unchallenged tube leadership in serving America's metallurgical laboratories is evidence of their superior quality, economy and performance.

Write Today for 1951 Catalog "McDanel Industrial Porcelains"

Refractory Porcelain Specialties in stock or designed to meet specific needs. Flasks, retorts, crucibles, etc., and parts "custom-made" to do the job that is needed.

**McDANEL REFRACTORY PORCELAIN CO.**
Beaver Falls, Pa.


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Continued

## Authorize Advance Allotments Of CMP Materials for Utilities

Advance authorizations for allotments of controlled materials to electric utilities for the first three quarters 1952 have been made by National Production Authority.

This will allow advance scheduling of orders for completion of essential projects.

Companies may continue to use either the standard method of computing quotas (based on annual use) or the alternative (based on quarterly use).

Advance allotment percentages under both methods for the three respective quarters are as follows, under amended M-50:

Carbon steel—standard, 14.1, 11.25, and 9.4 pct; alternative (Appendix C), 56.25, 45, and 37.5 pct.

Alloy steel—standard, 14.1, 11.25, and 9.4 pct; alternative (Appendix D), 56.25, 45, and 37.5.

Stainless — standard, 14.1, 11.25, and 9.4; alternative (Appendix E), 56.25, 45, and 37.5.

Aluminum—standard, 9.4, 7.5, and 6.25; alternative (Appendix A), 37.5, 30, and 25.

Copper—standard, 14.1, 11.25, and 9.4 pct; alternative (Appendix B), 56.25, 45, and 37.5 pct.

## Sell or Use Extra CMP Materials

Through Amend. 3 to CMP Reg. 1, a manufacturer with controlled materials or Class A products which he cannot use for permitted purposes may now hold the materials for use in other authorized production schedules or get permission to sell them.

Also, under Dir. 6 to CMP Reg. 1, a manufacturer of a Class A product may require a customer to make an allotment of materials for the order unless the allotment would overstock his permissible inventory. An order may be rejected if the requested allotment is not made.

## Wants Out of OPS Controls

Office of Price Stabilization has been asked to exempt from price control bituminous coal mines without rail connections that produce less than 20,000 tons per year. Operators of these truck mines argue that they cannot comply with OPS record-keeping requirements.

*Continued*

## Resellers of Machinery Keep Percentage Markup Over Cost

**CPR 67 provides automatic adjustment of ceilings to show changes.**

Businessmen who resell machinery and related goods will be able to retain their traditional percentage markups over cost in pricing under a new Office of Price Stabilization regulation now in effect.

Described as a method for "automatic adjustment of ceiling prices of resellers to reflect cost changes in commodities they sell," the order is Ceiling Price Reg. 67. OPS issued the regulation as a sequel to CPR 30, applying to machinery and related manufactured goods.

Two alternate methods of pricing are offered in CPR 67. The first, applicable to a commodity shown on a manufacturer's price list, permits the reseller to deduct the discount, if any, or add the percentage markup he applied during the period Apr. 1 to June 24, 1950.

If no list price has been used originally, the reseller determines his ceiling price by adding the percentage markup used in the above period to his current legal cost. If a reseller cannot use either method, he may apply to OPS and be given a ceiling price.

## Given a Lot of Tough Chestnuts

Clay P. Bedford, on leave as executive vice-president of Kaiser-Frazer Corp., was recently sworn in as Deputy Administrator of Defense Production Administration for production and procurement.

At the same time, he was named by ODM Director Charles E. Wilson as chairman of DPA's Production Executive Committee. Primary job of the committee is to break production bottlenecks. Bedford will also have general supervision of the Small Business executive committee.


# THOMAS *Flexible* ALL METAL COUPLINGS

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

**Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.**

**Thomas Couplings have a wide range of speeds, horsepower and shaft sizes: ½ to 40,000 HP — 1 to 30,000 RPM.**

*Specialists on Couplings for more than 30 years*



PATENTED FLEXIBLE DISC RINGS

**BACKLASH FRICTION WEAR and CROSS-PULL are eliminated LUBRICATION IS NOT REQUIRED!**

**THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.**

• • •

**NO MAINTENANCE PROBLEMS.**

• • •

**ALL PARTS ARE SOLIDLY BOLTED TOGETHER.**

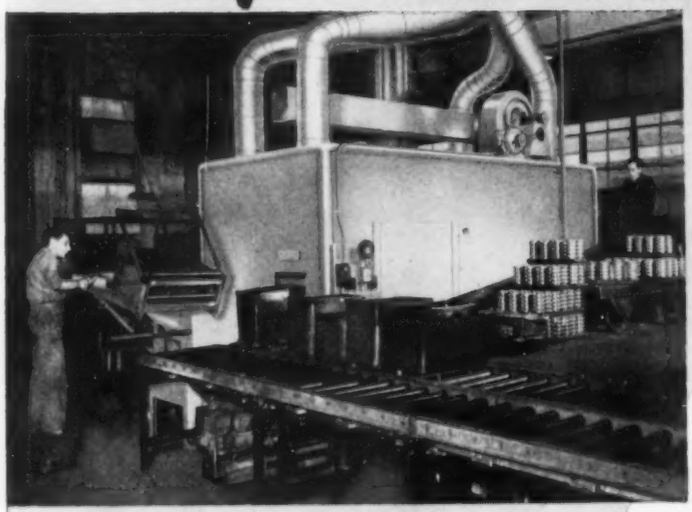


*Write for the latest reprint of our Engineering Catalog.*

**THOMAS FLEXIBLE COUPLING CO.**
WARREN, PENNSYLVANIA

intangible benefits

Pay-off!



for user of CINCINNATI Cleaning Machine

• BETTER PRODUCTS • BETTER-SATISFIED CUSTOMERS
• BETTER WORKING CONDITIONS

In a highly competitive field like steel treating, additional cost is hard to justify. However, a well-known job metal treating shop has found their investment in a Cincinnati Cleaning Machine pays excellent dividends.

Oil coated parts, 15 tons every 24 hours, are drained, washed with soluble oil, blown-off and dried. At the same time, in another section of the machine, the tote pans are cleaned, ready to receive the clean parts.

The versatility and economical operation of Cincinnati Cleaning Machines are graphically illustrated in this typical installation. Literally hundreds of different types and sizes of parts are cleaned on a production basis . . . at costs so low this job shop can render an extra service to its customers.

If you have a cleaning or finishing job . . . routine or complicated . . . large or small . . . call on Cincinnati Engineers. Without cost or obligation, they'll suggest the money-saving solution.

Cincinnati

CLEANING & FINISHING MACHINERY CO., INC.
313 HECLA STREET, IRONTON, OHIO

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Continued

## OPS Restates Export Policies: CPR 61 Must Be Used in Future

The Office of Price Stabilization has announced that all future export sales will be subject to ceilings imposed under Ceiling Price Reg. 61. Before Aug. 26, the seller had the option of pricing under regulations other than CPR 61. Now all markups must be determined under CPR 61 and prices filed with OPS either before or within 15 days after completion of the first sale of a particular commodity. Once filed, the reported markup may be used for subsequent sales of the same commodity without re-filing.

Exporters desiring special priority assistance in obtaining commodities for shipment to friendly countries must now apply for such assistance on form IT-835. Only a letter of request was required previously.

In this connection, the heavy power generating equipment industry is seeking set-aside of materials and production capacity for power generating equipment for export. Pointing out that such equipment is essential to the defense programs of friendly nations, manufacturers and exporters complain that the present priority system is most inadequate.

## Ease Labs' Material Restrictions

NPA order M-71 has been amended to relax material restrictions on production runs of pilot models by specified types of laboratories.

Laboratories covered are generally those for research, testing, analysis, clinical work and instruction. Production control labs are included only when engaged in testing operations for controlling quality of a product.

The order now permits a special self-certifying symbol (DO X-1) to order quarterly up to the following: Carbon steel, 5 tons; alloy steel, except stainless, 1000 lb; copper and alloys, copper wire and brass mill products, 300 lb; and aluminum, 500 lb.

*Continued*

## Air Force Small Business Experts

Three areas in the Eastern Air Procurement District (New York, Newark, Philadelphia) will get "small business specialists" to oil Air Force machinery intended to give smaller firms either prime contracts or subcontracts with the primes.

The specialists will gather subcontract needs of prime contractors and list this information at the Small Business Offices recently set up in the three areas. Now the offices are listing small firms seeking subcontracts. This list is open to prime contractors seeking help in making items.

Names of the specialists and addresses are: Robert S. Clark, 67 Broad St., New York, N. Y.; Thomas J. Boylan, 1411 Walnut St., Phila.; and Mario Rizzola, 218 Market St., Newark, N. J.

## Award 11 Temco Subcontracts

A grand total of 11 different subcontracts ranging in value from $400 to $1800 each were awarded to small business by Texas Engineering & Mfg. Co., Inc., Dallas, Tex. This spread of war work resulted from contacts made at the Armed Forces Small Business Procurement Clinic held recently at the Will Rogers Coliseum in Fort Worth.

Perhaps of more value to small business is that Temco established about 60 firms as prospective sources for future work.

## Small Business Scores on Tools

Repair and maintenance personnel in the military services will be important users of many of the $45 million worth of hand tools bought by the Navy in fiscal 1951. The Navy has single-service authorization to procure these items for all military agencies.

Firms classed as small business contracted to supply more than 84 pct, or $29 million worth, of the total. Wide competition, the Navy said, was afforded by industry-wide solicitation of bids and requests for quotations.


# Wyandotte W.L.G. for heavy duty immersion cleaning

For heavy duty immersion cleaning you need Wyandotte W.L.G.* It conditions the water, removes fabricating compounds, rinses freely.

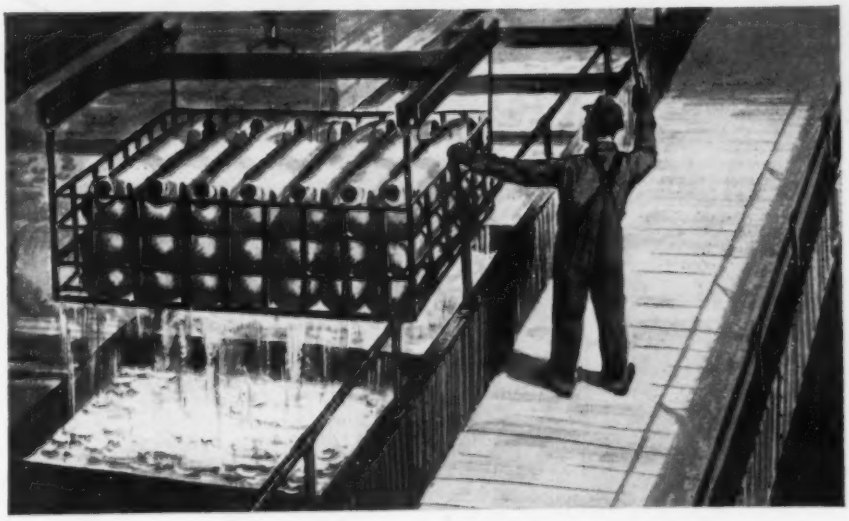
Try W.L.G. for still tank cleaning of any ferrous metal and some non-ferrous metals. (Such as copper and most copper alloys but NOT aluminum or its alloys.) Try W.L.G., too, for tumble barrel cleaning and in rotary type washing machines. It will do an excellent job for you prior to vitreous enameling, barrel plating of zinc or cadmium, dip type phosphate treatment before painting, or overhaul cleaning of engine parts, etc. Experienced Wyandotte Representatives are available. When you need technical assistance in your shop, call the nearest Wyandotte man. *Reg. U. S. Pat. Off.

WYANDOTTE

**W.L.G.**

Heavy duty immersion cleaner

- *Dissolves completely*
- *Conditions hard water*
- *Removes mineral and saponifiable fabricating compounds*
- *Cleans ferrous and non-ferrous metals*
- *Rinses freely*
- *Has long life in solution*



"Cleaning the World"

**THE WYANDOTTE LINE**—products for burnishing and burring, vat, electro, steam gun, washing machine, and emulsion cleaning, paint stripping, acid pickling, related surface treatments and spray booth compounds. ***An all-purpose floor absorbent:*** Zorball—**in fact, specialized products for every cleaning need.**

**Wyandotte Chemicals Corporation**
WYANDOTTE, MICHIGAN
*Service Representatives in 88 Cities*

Wyandotte
REG. U. S. PAT. OFF.

# Your Arcos Field Engineer Can Help KEEP YOUR PRODUCTION GOING




Your Arcos representative can be more helpful to you now than ever before. He can help you—

- Select electrodes to meet defense specifications
- Often find alternate electrodes for the job
- Locate available electrodes of a different diameter that can do the job
- Advise on welding techniques to step up production

Get in touch with your Arcos representative today. He will do his best to help you keep your production rolling.

**ARCOS CORPORATION**

*1500 South 50th Street • Philadelphia 43, Penna.*

Send for this ARCOS Application Chart.

# WELD WITH ARCOS



**Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes**




## Fast Tax Write-Offs

55 certificates
issued by DPA during
Aug. 10-17
totaling $131,306,826
3234 authorized to date
totaling $9,014,461,241

Latest DPA certificates listed by company, use, amount applied for, amount eligible, and pct approved.

Atlantic Machine Tool Works, Inc., Newington, Conn., turbine assemblies, $133,000, $120,639, 80.

High Voltage Engineering Corp., Cambridge, Mass., generators, accelerators, $245,000, $139,465, 75.

Noma Electric Corp., Ansonia, Conn., submarine cables, $112,066, $27,789, 75.

Clark Bros. Bolt Co., Inc., Milldale, Conn., bolts and nuts, $96,707, $96,707, 75.

General Motors Corp., Rochester, N. Y., fuel control, $2,310,600, $2,310,600, 75.

General Motors Corp., Harrison, N. J., roller bearings, $2,102,085, $2,102,085, 75.

General Motors Corp., Harrison, N. J., roller bearings, $4,281,772, $4,117,772, 75.

Hunter Mfg. Co., Bristol Twp., Pa., ordnance, $757,565, $575,565, 75.

Universal-Cyclops Steel Corp., Titusville, Pa., specialty steels, $279,000 $279,000, 70.

Koppers Co., Inc., Baltimore, piston rings, $165,672, $165,672, 85.

Breco Mfg. Co., Baltimore, plugs, relief valves, $24,036, $22,578, 85.

Western Railway of Alabama, Atlanta, transportation-rail, $25,148, $16,853, 80.

Electro Manganese Corp., Knoxville, Tenn., manganese metal, $240,624, $240,624, 75.

Cincinnati Steel Treating Co., Cincinnati, heat treating (mach. tool), $110,483, $110,483, 60.

Conner Tool & Cutter Co., Detroit, drills, $46,546, $46,546, 90.

Great Lakes Steel Corp., Ecorse, Detroit, steel slabs, billets, $25,000,000, $24,751,126, 75.

Novi Equipment Co., Novi, Mich., engine governors, $140,000, $140,000, 75.

Minnesota Mining & Mfg. Co., Copley Twp., Ohio, sulfuric acid, $2,068,850, $2,068,850, 80.

General Motors Corp., Flint, Mich., crown drive transmission, $2,888,965, $2,858,965, 75.

General Motors Corp., Vandalia, Ohio, propellor assemblies, $886,679, $886,679, 75.

General Motors Corp., Sandusky, Ohio, ball bearings, $4,599,700, $4,599,700, 75.

Kelsey-Hayes Wheel Co., Detroit, hub assemblies, $332,955, $332,955, 85.

S. & Z. Machine Tool & Die Co., Cleveland, panel instruments, latch assembly for tanks, $55,628, $55,628, 80.

Pressed Steel Products Co., Cleveland, plug assembly, $40,965, $40,965, 85.

Holley Carburetor Co., Van Dyke, Mich., automotive carburetors, $476,284, $411,297, 75.

Chrysler Corp., Detroit, shell bands, $195,000, $195,000, 75.

Haber Corp., Chicago, screws, valves, bushings (pump, aircraft), $274,670, $274,670, 85.

Chicago & North Western RR. Co., Chicago (Home Office), railroad transportation, $7,481,384, $7,481,384, 65.

Tri-Clover Machine Co., Cudahy, Wis., pipe and tube fittings, $18,792, $18,792, 75.

Chicago, Indianapolis & Louisville Railway Co., Chicago, rail transportation, $627,500, $627,500, 80.

Missouri, Pacific Railroad Co., St. Louis, Mo., rail-transportation, $327,560, $327,560, 80.

Coast Centerless Grinding Co., Los Angeles, housings, $78,535, $78,535, 85.

Petr-O-Fire Co., Los Angeles, heat exchangers, $123,668, $117,668, 60.

Allied Appliance Co., Burbank, Calif., screw machine parts, $60,210, $60,210, 90.

Calmec Mfg. Co., Los Angeles, sleeves, $124,050, $124,050, 80.

Industrial Plating Works, Inc., Seattle, anodizing & electro-plating, $99,000, $99,000, 60.

Norton Co., Quebec, Canada, silicon carbide abrasive, $2,336,389, $1,751,129, 75.



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# LINDE'S News of Metalworking

## raze-Welded Repair Saves ix Months' Production Time

When the base of a 5-ton alligator ear cracked in service, early return normal plant operation appeared opeless. Delivery of a new shear was x months away . . . cost $1,800.

But LINDE service engineers sug- ested braze-welding. Within a few ys the shear was back in service— rmanently repaired at a cost of only 55. This single braze-welding job ved the manufacturer $1,445 and x months of valuable production time.

Similar typical savings account for despread industrial acceptance of aze-welding as a quick, easy way to n steel, cast iron, malleable iron, and ny dissimilar metals. And routine pairs by braze-welding are often ade without dismantling machines. ut-down time is always kept to a inimum.

Why not save the cost, delivery, and stallation time required for that new rt? Put the old one back on the job th braze-welding.

Braze-welding is only one of many ne- and moneysaving LINDE meth- s for making, cutting, joining, treat- g, and forming metals. For further formation, call or write our nearest fice today.



*placement of this $1,400 ring gear uld have taken more than six months. aze-welding at half the cost rebuilt lly worn teeth and restored the gear to service in just a few days.*

### What's News

► One steel company has found their OXWELD C-60 Cutting Blowpipe so effective in reducing large pieces of scrap that they are now purchasing quantities of large-size scrap to process themselves.

► Saran and polystyrene, previously resistant to speedy pulverization, are now being successfully ground by LINDE'S new liquid nitrogen pulverization method. . . . Efficiency is such that the new process pulverizes some previously difficult-to-grind materials at rates over 700 lb. per hr.— using small mill hammers.

► Magnesium hydraulic systems for landing gears were formerly discarded at an airplane shop when pinhole leaks appeared. Now, thanks to HELIARC welding they're repaired at a saving of $500 each.

"LINDE" SERVICE DOESN'T COST — IT PAYS!

LINDE AIR PRODUCTS COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

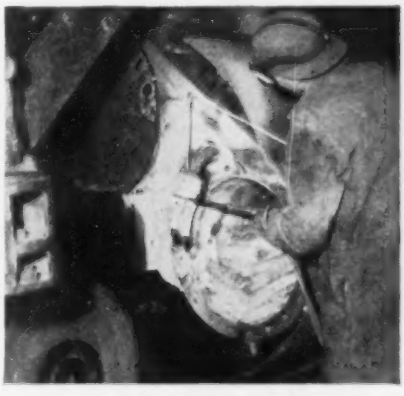
## "Irreplaceable" Cylinder Back at Work in 20 Hours

It looked as if "old faithful" was headed for the scrap pile when overworked pistons snapped and cracked the cylinder of a 1904 model railroad locomotive. To replace the cylinder would have been next to impossible. But braze-welding had "old faithful" back at its lumber mill job in only 20 hours.

Repairs were made without dismantling. After the crack was prepared for welding, the cylinder was covered with asbestos paper and preheated. Then the crack was welded, and the cylinder rebored. Total preheating and welding time was 13 hours.

Repairs cost only $138, including materials, labor, and overhead. Even if the cylinder could have been replaced—at a cost over $4,000—the locomotive would have been idle many months instead of the few hours required to make the repair.

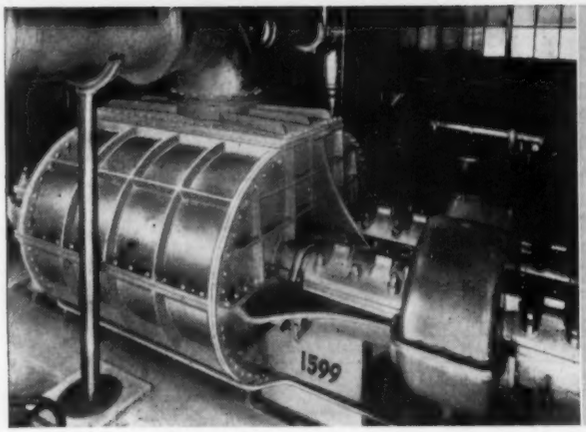
Rapid repair of unavailable or hard-to-get parts is a natural job for braze-welding. Try it yourself, next time you're bothered with a troublesome replacement problem.



*Braze-welding this locomotive cylinder without dismantling saved a lumber company more than $4,000. On special jobs like this, LINDE service and supervision assures success.*

The terms "Heliarc," "Linde," and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

# NO V-P-L WORRIES WITH R-C BLOWERS



ROTARY

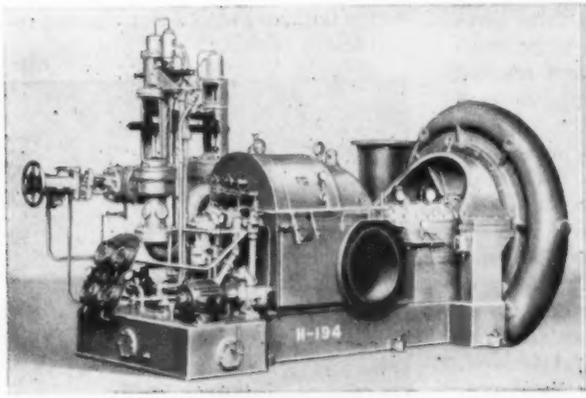
Rotary Positive Gas Exhauster in coke plant service in southern steel mill. Capacity 12,000 cfm.

Today's production urgencies call for "no-vacation" performance from blowers and other equipment to move gas and air. You must be sure of positive Volume, at the required Pressure, and at Low power cost to keep down rising expenses. The answer is Roots-Connersville Blowers with V-P-L.

You can obtain this freedom from worry by installing your choice of R-C Centrifugal or Rotary Positive equipment. This exclusive *dual-ability* gives you the choice of either type to best meet your requirements. Wide latitude in sizes, from 5 cfm to 100,000 cfm, permits selection of units with capacities close to your specific needs. Often, this flexibility saves time, cost, space, weight and power charges.

R-C engineers will gladly counsel with you on any problem of moving or measuring gas or air to keep production going.

ROOTS-CONNERSVILLE BLOWER CORPORATION
510 Ohio Avenue, Connersville, Indiana



CENTRIFUGAL

Type OIB Gas Exhauster. Capacity 19,000 cfm, driven by 332 hp steam turbine.

ROOTS-CONNERSVILLE

BLOWER BUILDERS SINCE 1854

ONE OF THE DRESSER INDUSTRIES


# STEEL CONSTRUCTION NEWS

**Fabricated Steel awards this week** clude the following:

10939 **Tons,** Boston, Mass., Boston conn nection to Boston Central Art (7378 tons of structural carbon s for floor system and bracing; tons of structural carbon steel bents; 696 tons of structural sili steel for bents; 92 tons of struct silicon steel for floor system bracing). Completion date Dec. 1953. Bethlehem Steel Co., Pi burgh, Pa. Low bidder.

865 **Tons,** Union County, N. J., high bridges, Route 4, Sect. 9 and 9C, Jersey State Highway Dept., Contracting Co., Hackensack, N. Low bidder.

675 **Tons,** Windsor, Conn., 4 span p girder bridge and macadam proaches. Burnalli Construction Southington Co. Low bidder.

500 **Tons,** Milwaukee, Juneau St. Bri Julius Thielacher contractor to Am ican Bridge Co.

235 **Tons,** Snyder County, Pa., high bridge, Pennsylvania State Dept. Highways to Fort Pitt Bridge Wo Pittsburgh.

152 **Tons,** Thetford, Vermont, bridges Chelsea-Thetford Center Road Chelsea Road. Miller Construct Co., Windsor, Vermont. Low bid

**Fabricated Steel inquiries this week** clude the following:

335 **Tons,** Lackawanna and Wyom Counties, Pa., Divided highway, I-beam bridge and extension of ex ing bridge. Pennsylvania Dept. Highways, Harrisburg, Pa. Bids Sept. 7, 1951.

258 **Tons,** Montgomery, Vermont, 3 W F beam bridges. G. A. Pierce, Albans, Vermont, district engin Completion date, Sept. 1, 1952.

200 **Tons,** Metuchen, N. J., Ordnance tomotive Maintenance Shop, Rari Arsenal, U. S. Army Corps of E neers. Bids due Sept. 6.

196 **Tons,** Chester County, Pa., high bridge for Pennsylvania State De of Highways. Bids due Sept. 14.

142 **Tons,** Berks County, Pa., one I-be bridge. Pennsylvania Dept. of Hi ways, Harrisburg, Pa. Bids to A 31, 1951.

**Reinforcing Bar awards this weeks** clude the following:

670 **Tons,** Kenosha, Wisconsin, Nash M tors Building. Permanent Constru tion Co., contractor, to Worden All Co., Milwaukee.

**Reinforcing Bar inquiries this week** clude the following:

775 **Tons,** Chicago, apt. building at and Cottage Grove. S. Nielsen C Chicago. Low bidder.

105 **Tons,** Lackawanna and Wyomi Counties, Pa. Divided highway, I-beam bridge and extension of ex ing bridge. Pennsylvania Dept. Highways, Harrisburg, Pa. Bids Sept. 7, 1951.

## Another Cost-of-Living Pay Hik

Cost-of-living rose two-tenths 1 pct between mid-June and mi July, according to the Bureau Labor Statistics, thus giving a p increase to workers under escala clauses.

Both Ford Motor Co. and Ge eral Motors said they would i crease pay of production employe by 1¢-an-hour on Sept. 1.



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# CrysCoat is in Good Company!




*Prepares Metal Surfaces for Painting

**Patented Material and Process*

INLAND "Comforteer" heaters are scientifically designed for heating perfection. They are carefully engineered to distribute abundant heat gently, quickly, evenly throughout the room. The sturdy, steel cabinets of "Comforteer" heaters are CrysCoated before painting to assure perfect paint adherence and to prevent under-paint corrosion if ever finish is accidentally injured.

The Oakite *CrysCoat* Process may be just what you're looking for. With minimum equipment . . . in minimum time . . . at minimum cost you can (1) clean metal surfaces and condition them for painting; (2) improve the adhesion of paint to metal; (3) prevent corrosion before metal is painted; (4) localize corrosion under paint if finish is broken.

**The Oakite *CrysCoat* Process Offers These Extras:**

1. **Eliminates operations . . . uses less equipment**
2. **Cuts operating time**
3. **Uses less chemicals for cleaning and conditioning**
4. **Reduces heating costs**
5. **Saves cost of expensive acid-proof tanks and equipment**
6. **Saves cost of frequent descaling and desludging**
7. **Drag-out costs are less because of low original cost of solution**
8. **Saves paint**
9. **Cuts cost of rejects caused by rusting before painting**

**FREE** . . . illustrated folder describes the Oakite *CrysCoat* Process for use in before-paint-treatment of steel, aluminum sheet and castings, zinc die castings and galvanized surfaces. If you are engaged in the fabrication of civilian goods or the speedy production of defense orders—send for Folder F7642.

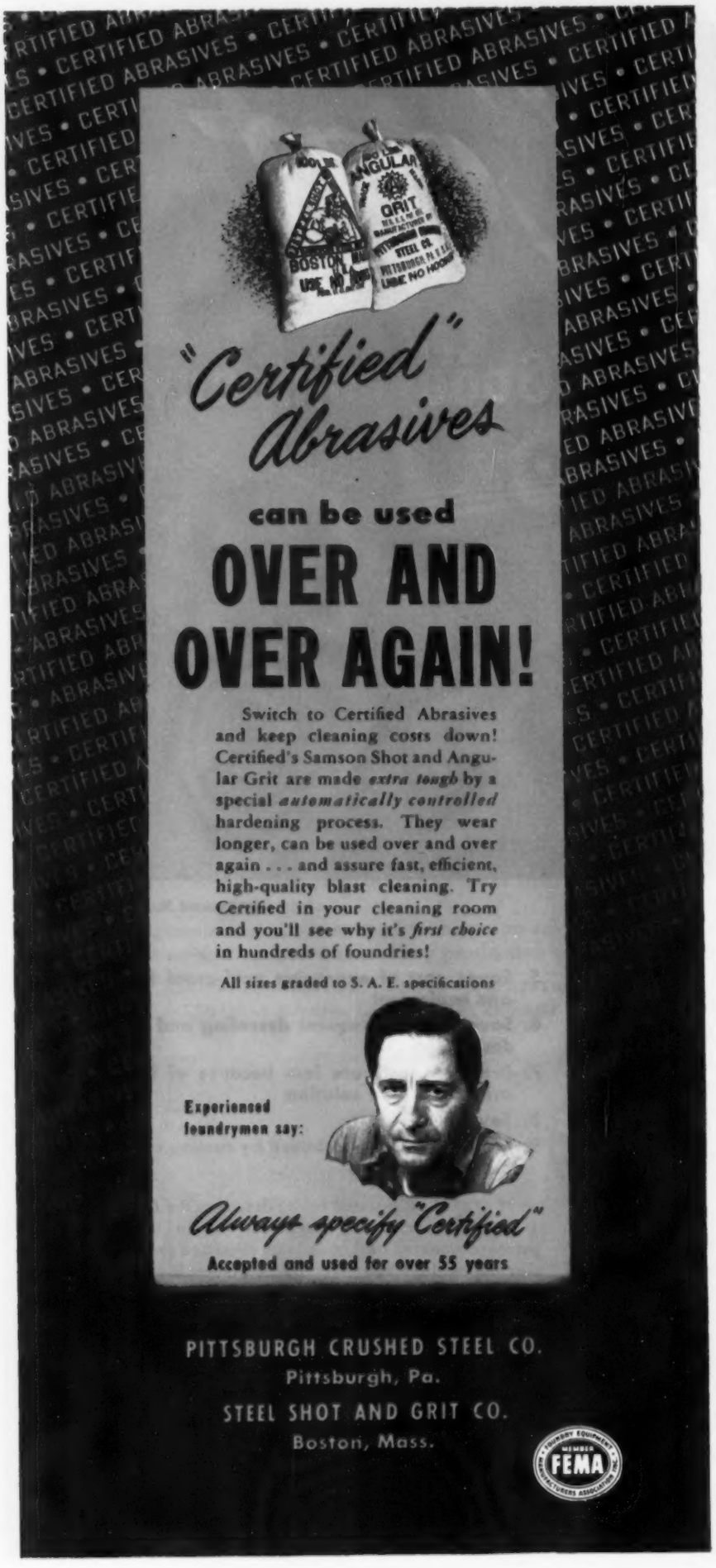
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MATERIALS • METHODS • SERVICE

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# *publications*

*Continued from Page 35*

## Air cylinders

*Rivett* air cylinders are designed with simplicity, have no tie rods. Keeper ring construction permits covers to be rotated to convenient pipe locations and the cylinder applied in a minimum of space. Self-adjusting composition packings provide long life and minimum friction. *Rivett Lathe & Grinder, Inc.*

**For free copy insert No. 27 on postcard, p. 35.**

## Lubrication

Good lubrication insures continued, trouble-free operation. An 18-p. booklet describes the problems involved in supplying lubricant to the many wear points in rolling mills. Lubrication instructions for Bliss rolling mills are given. *E. W. Bliss Co.*

**For free copy insert No. 28 on postcard, p. 35.**

## Die pressed forgings

A revised edition of the reference booklet *Die Pressed Forgings* has been issued. To the materials engineer and product designer the booklet offers practical, comparative illustrations to show what die pressed forgings can do. Tabulations of the physical properties of copper and copper alloys suitable for forgings are included. *Anaconda Copper Mining Co.*

**For free copy insert No. 29 on postcard, p. 35.**

## Investment castings

Advantages of Jelrus precision investment castings are described in a new 4-p. folder. Small close tolerance parts with intricate contours may be produced in any castable alloy. Illustrations showing applications and savings possible with the process are presented. *Jelrus Co., Inc.*

**For free copy insert No. 30 on postcard, p. 35.**

## Flow control

Principles of operations as well as the fundamental reasons for improved flow ratio control are described in a new booklet. List of typical applications is included. *Fischer & Porter Co.*

**For free copy insert No. 31 on postcard, p. 35.**

***Resume Your Reading on Page 36***

## new equipment

*Continued from Page 38*

### Movable partitions

Korweld, a new panel construction for movable partitions, incorporates a non-metallic composition board of absolute, permanent flatness that is in appearance almost identical with the Hauserman steel panels. The partitions are 3 in. thick. Facing panels, of durable non-metallic material, are 3/16 in. thick. They are plastic welded to a honeycomb of impregnated paper, with a process developed by the Cycleweld Div. of Chrysler Corp. Steel is used for posts, base, cornice, lay-in wiring facilities, accessories, supplied with the Korweld panels which stand a pushing pressure of 70 psi and an overall pulling pressure of 500 lb. They are sealed from within and without and edges are covered with metal. *E. F. Hauserman Co.*

For more data insert No. 13 on postcard, p. 35.

### Soft hammer

Combination of spring construction and specially-developed alloy in the Custanite Spring-Flo hammer results in a safety hammer that will not chip, spark, or mushroom. The hammer retains its original weight and balance because no metal is lost when in use. The head is pinned through-and-through to the hickory handle with a heavy brass pin. Six sizes range from ¾ to 6 lb. *Charles Budd Corp.*

For more data insert No. 14 on postcard, p. 35.

### Auger bits

A new line of single twist bits (ship augers) are available in nine sizes from 8/16 to 16/16 in. Bits are manufactured with hand brace shanks or square shanks for bar handles. They are also furnished with spur or spurless heads, with or without screw tips. *Midway Tool Co., Inc.*

For more data insert No. 15 on postcard, p. 35.

*Turn Page*




make your PUNCH PRESSES *Automatic*

**It's Easy...with WITTEK Roll Feeds and Reel Stands**

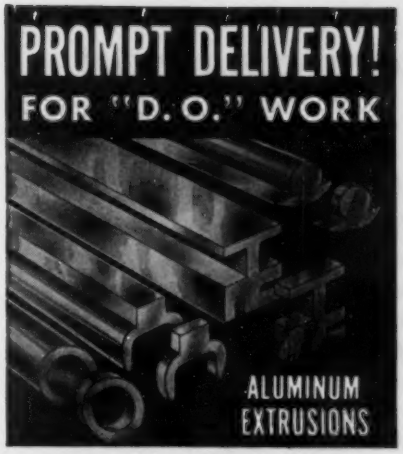
Wittek Roll Feeds handle any type of coiled strip stock and are made in single roll, double roll, and compound types with straighteners, in models to feed in any of four directions. They are reliable and accurate with simple, quick adjustment of feed length. Standard sizes and models meet a wide variety of press size and capacity conditions.

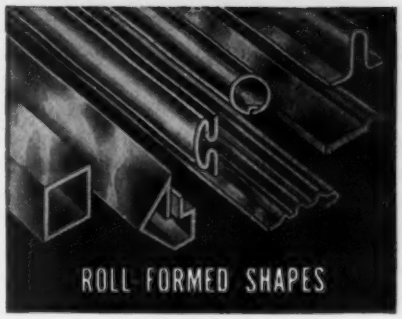
Wittek Reel Stands facilitate handling coiled stock.

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# *new equipment*

*Continued from Page 107*

## Coolant filters

The Delpark coolant filter for use in grinding and machining operations is a continuous self-cleaning gravity filter. It removes solids from liquids that will flow, by gravity, through filter material and discharges the solids, in a relatively dry state, into an outside container. The filter material, fed from a roll, rests on, and conforms to, a flat endless conveyor of open construction. Dirt laden liquid fed onto it passes through and the solids remain on the surface. The filter material is carried forward automatically when flow through it is reduced by solids upon it, and clean material is brought under incoming dirty liquid. The process is fully automatic. Capacities range from 2 to several hundred gpm. *Delpark Corp.*

**For more data insert No. 16 on postcard, p. 35.**

## Protection for machinery

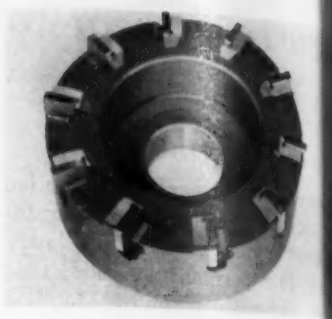
A heavy-duty packaging paper, treated with a volatile type rust inhibitor, has been developed for protection of heavy machinery and bulky metal parts during storage and shipping. The paper, called Vapor Wrapper, is tough, resilient and tear-resistant, moisture and water repellent. It is made of two high-strength kraft sheets, cemented together and reinforced with spun glass fibers. *Nox-Rust Chemical Corp.*

**For more data insert No. 17 on postcard, p. 35.**

## Dock board lock

A unique lock unit incorporated into the ramp section of Magline magnesium dock boards automatically drops into place against the dock, securely holding the unit in position during loading operations. It provides positive lock action, and eliminates possibility of board slippage. *Magline, Inc.*

**For more data insert No. 18 on postcard, p. 35.**



## Advanced machining

A solid carbide indexable blade fa milling cutter has been added the line of Futurmil face milli cutters, designed for milling c armor plate and other difficult st machining jobs. Its solid carb blades, when dull, are indexed a new cutting edge. Blade is squa furnished in three sizes ra ing from 1 to ¾ in. depending the depth of cut desired. Bla can be indexed or substituted wi out removing the cutter from t milling machine spindle, and c be indexed eight times before grinding. *Detroit Milling Cut Co.*

**For more data insert No. 19 on postcard, p.**

## No banging together

For safer transit of parts in t production line, a new peg ra truck is heavy steel, all welde with 5 or 6-in. rubber tired caste Each truck has 90 pegs, ⅜-i square steel, 7 in. long, cover with fiber, cushioned at the ba and set at a 15° angle to avo parts banging against each oth *Lloyd Engineering Co.*

**For more data insert No. 20 on postcard, p.**

## Two layers

A solvent possessing high grea cleaning and carbon removi properties for cleaning carburetor fuel pumps, pistons, metal par is a di-phase solvent. It compris a water emulsion floating top lay sealing a volatile chlor-aromat solvent lower layer. Di-phase so vent is fast, produces complete an quick results, and can be used a replacement for chlorinated so vents in solvent distilling cleani tanks. *Curran Corp.*

**For more data insert No. 21 on postcard, p.**

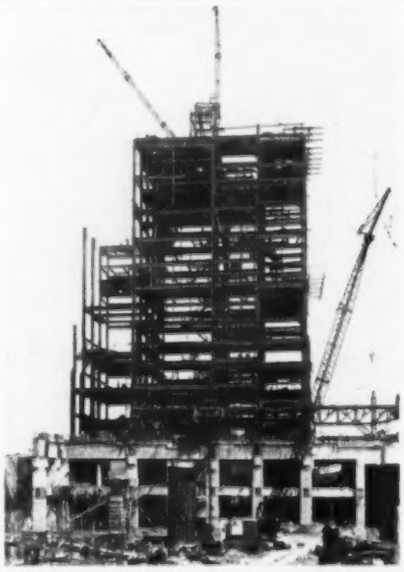
***Resume Your Reading on Page 39***


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When the engineering is completed and you're ready to talk figures on the fabrication of the steel for your structure . . . whether it's a four-unit power plant or a multi-story office building . . . call in an Ingalls engineer for consultation. As the nation's largest independent fabricator of steel, Ingalls can work faster, for less money, and do the job from plan to production.

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# IRON AGE *markets and prices*

## *market briefs and bulletins*

**starting up** — The new Westinghouse Television-Radio Div. plant at Metuchen, N. J., will on Sept. 4 start limited defense output. About 50 people will be hired in September to get things rolling and 200 workers will be on the job before the close of the year. Production on a small portion of the plant's 400,000 sq ft of space will be of a confidential electronic nature for the Military. Westinghouse originally built the plant as a new manufacturing center to triple its television production.

**mica pinch** — Rugged is the word for mica these days. Military orders are being delivered on time. But the stockpile deficit is growing. Controls officials are looking for new and better ways of saving mica, although they say no formal conservation order is in sight. Some members of the industry advisory committee expect official action will be necessary this fall.

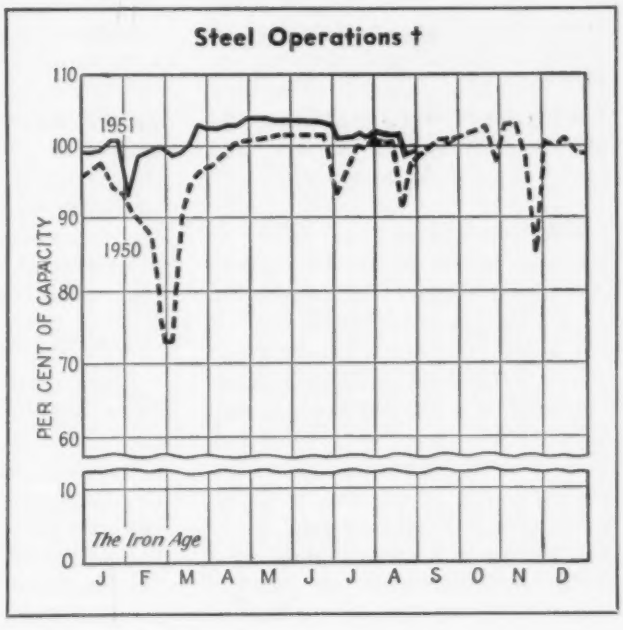
**strike ended** — Railroad trainmen serving Bethlehem Steel's Lackawanna Plant ended their "sick" strike Saturday. Operating personnel hastened to get the plant back into operation as quickly as possible. But it was expected that it would take a few days to restore capacity operations.

**price cuts** — Prices of larger diameter Rollpins have been cut 37 to 73 pct by Rollpin Div. of Elastic Stop Nut Corp. of America. New, lower prices will apply to all unfilled orders as of Aug. 1, 1951. They were made possible through economies resulting from installation of new high-speed production equipment.

**state of finances** — Most of the 161 manufacturing companies replying to a survey of the National Industrial Conference Board reported they had adequate working capital and expect no difficulty in borrowing if necessary. Contributing to the drain on cash are new capital expansion and greater reserves for taxes.

**new baler** — One of the largest and most modern scrap balers, costing $250,000, will start operation on Sept. 18 in the yard of A. Shaw & Co., Inc., Cleveland scrap dealers. It is being installed by Loggenman Bros. Co., Milwaukee, and will be ready for Cleveland's Iron and Steel Scrap Day. Among other dignitaries to attend ceremonies at Shaw & Co. will be Commerce Dept. Secretary Sawyer. He will press the button to start the baler working.

**clutches** — The mobilization program will cause a sharp increase in demand for electric brakes and clutches, reports Steven P. J. Wood, vice-president of the Warner Electric Brake & Clutch Co., Beloit, Wis. Shipments in the first half of 1951 were more than double shipments in the corresponding period last year. The expected rise in machine tool production may further boost demand.




### District Operating Rates—Per Cent of Capacity †

| Week of | Pittsburgh | Chicago | Youngstown | Philadelphia | West | Buffalo | Cleveland | Detroit | Wheeling | South | Ohio River | St. Louis | East | Aggregate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aug. 19 | 99.0* | 104.5 | 100.0 | 101.0 | 108.0 | 40.0 | 99.5* | 106.0 | 100.0* | 98.0 | 94.0 | 90.5 | 111.0 | 98.0 |
| Aug. 26 | 98.0 | 104.5 | 101.0 | 101.0 | 103.0 | 75.0 | 99.0 | 106.0 | 100.0 | 98.0 | 94.0 | 87.0 | 112.5 | 99.5 |

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.
* Revised.

# nonferrous metals

*outlook and market activities*

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**NONFERROUS METAL PRICES**

| | Aug. 22 | Aug. 23 | Aug. 24 | Aug. 25 | Aug. 27 | Aug. 28 |
|---|---|---|---|---|---|---|
| Copper, electro, Conn. | 24.50 | 24.50 | 24.50 | 24.50 | 24.50 | 24.50 |
| Copper, Lake delivered | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 |
| Tin, Straits, New York | $1.03 | $1.03 | $1.03 | .... | $1.03 | $1.03* |
| Zinc, East St. Louis | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 |
| Lead, St. Louis | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 |

*Tentative

Note: Quotations are going prices.



*by R. Hatschek*

**Copper Workers Strike**—The International Union of Mine, Mill and Smelter Workers, together with a number of AFL nonferrous metal workers' unions, struck against the four major copper producers in this country. Starting at 7:00 A. M. Monday, the walkout idled 100,000 men and tied up some 95 pct of the industry. At press time, the Garfield Smelter of American Smelting & Refining Co. had not struck but was idled by a power plant walkout. Mine and smelter production of lead and zinc were also hit by the strike.

**Kennecott Says "No"**—The immediate cause of the strike was Kennecott Copper Co.'s rejection of a government proposal calling for a 16¢ per hour wage increase plus a pension plan which Kennecott estimated would cost an additional 4½¢ per hour. This had been okayed by the unions. Kennecott's last offer was a 11½¢ boost plus the pension plan, while the unions had originally asked a 17½¢ increase with the pension plan. The settlement made by Kennecott was to establish a pattern for the whole industry.

**Truman Acts** — On Monday, President Truman appealed to the men to return to work and also brought in the Wage Stabilization Board to investigate the dispute and make recommendations. It was considered unlikely that he would seize the industry—as proposed by union officials. There was also speculation that the White House would invoke the Taft-Hartley Act and seek court injunction to call off the strike for 80 days.

Defense Mobilizer Charles E. Wilson expressed his concern over the loss of even one day's production of a strategic metal so vital to the rearmament program. The copper shortage had already caused 25,000 tons of metal from the national stockpile to be made available to industry as well as the suspension of third quarter deliveries of copper to the stockpile. (See THE IRON AGE, Aug. 23, 1951, p. 118.)

**Brass Mill Ceilings** — Ceiling Price Regulation 68 went into effect on Aug. 23, establishing top prices for brass mill products. The new prices may be found on the opposite page. Generally, the order is a roll-forward from the General Ceiling Price Regulation in order to allow fairer profits in the light of increased costs of Chilean copper, which some of the mills depend on to a large extent. Not included are fabricated items made from brass mill products or any copper or copper alloy product produced by a copper refiner or smelter.

**Must File By Sept. 23**—Manufacturers of brass mill products have until Sept. 23 to file with the Office of Price Stabilization all published price lists showing quantity differentials, discounts and the like used in determining charges under CPR 68. These lists must have been in effect on Dec. 31, 1950. Producers delivering from Pacific Coast states may charge premiums if they were in effect on that date.

**Harvey Still Trying**—Negotiations by Harvey Machine Co. to obtain a $46 million government loan to build an alumina plant in Washington and a reduction plant in Montana are being kept alive, but the result of correspondence between the company and Defense Production Administration is still uncertain. Harvey needs a Reconstruction Finance Corp. loan after DPA approval.

After considerable discussion between Leo M. Harvey, company head, and DPA officials, the former was quoted as saying he could not accept the government's repayment terms, requiring half the net profit from his Los Angeles plant. The discussions had apparently broken down last week but it has unofficially been reported that Harvey had advanced an alternate proposal to DPA.

## MILL PRODUCTS

*(Cents per lb, unless otherwise noted)*

### Aluminum

*(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)*

Flat Steel: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 36.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate ¼ in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.2¢.

Extruded Solid Shapes: Shape factors 1 to 5, 30.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 28, 39.6¢ to $1.16; 36 to 38, 47.2¢ to $1.70.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 38.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 35¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32 in., 53.5¢ to 42¢; ⅜ to 1½ in., 41.5¢ to 39¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 31.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63-S-T-5, OD in in.: 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.42; 96 in., $1.522; 120 in., $1.902; 144 in., $2.284. Gage 0.24 x 28 in., 72 in., $1.379; 96 in, $1.839; 120 in., $2.299; 144 in., $2.759. Coiled Sheet: 0.019 in. x 28 in., 29.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

### Magnesium

*(F.O.B. mill, freight allowed)*

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in. 66¢; ⅛ in. 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 78¢; 16, 85¢; 18, 93¢; 20, $1.05; 22, $1.27; 24, $1.67. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base Up to ¾ in. diam, 10,000 lb; ⅞ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢ 0.22 to 0.25 lb, 5.9 in., 59.3¢ 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 5 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb, ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 94¢; 1 to 2 in., 76¢; 0.165 to $0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in. Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

### Titanium

*(10,000 lb base, f.o.b. mill)*

Commercially pure and alloy grades: Sheet and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

### Nickel and Monel

*(Base prices, f.o.b., mill)*

| | "A" Nickel | Monel |
|---|---|---|
| Sheets, cold rolled | 77 | 60½ |
| Strip, cold-rolled | 83 | 63½ |
| Rods and bars | 73 | 58½ |
| Angles, hot-rolled | 73 | 58½ |
| Plates | 75 | 59½ |
| Seamless tubes | 106 | 93½ |
| Shot and blocks | .. | 53½ |

### Copper, Brass, Bronze

*(Freight prepaid on 200 lb)*

| | Sheet | Rods | Extruded Shapes |
|---|---|---|---|
| Copper | 41.68 | .... | 41.28 |
| Copper, h-r | .... | 37.53 | .... |
| Copper, drawn | .... | 38.78 | .... |
| Low brass | 39.67 | 39.36 | .... |
| Yellow Brass | 38.28 | 37.97 | .... |
| Red brass | 40.14 | 39.83 | .... |
| Naval brass | 43.20 | 37.26 | 38.52 |
| Leaded copper | .... | 41.58 | .... |
| Com'l bronze | 41.13 | 40.82 | .... |
| Mang. bronze | 46.92 | 40.81 | 42.37 |
| Phos. bronze | 61.07 | 61.32 | .... |
| Muntz metal | 41.18 | 36.74 | 37.99 |
| Ni silver, 10 pct | 49.82 | 52.04 | .... |

## PRIMARY METALS

*(Cents per lb, unless otherwise noted)*

| | |
|---|---|
| Aluminum ingot, 99+%, 10,000 lb, freight allowed | 19.00 |
| Aluminum pig | 18.00 |
| Antimony, American, Laredo, Tex. | 42.00 |
| Beryllium copper, 3.75-4.25% Be | $1.56 |
| Beryllium aluminum 5% Be, Dollars per lb contained Be | $69.00 |
| Bismuth, ton lots | $2.25 |
| Cadmium, del'd | $2.55 |
| Cobalt, 97-99% (per lb) | $2.10 to $2.17 |
| Copper, electro, Conn. Valley | 24.50 |
| Copper, Lake, delivered | 24.625 |
| Gold, U. S. Treas., dollars per oz. | $35.00 |
| Indium, 99.8%, dollars per troy oz. | $2.25 |
| Iridium, dollars per troy oz. | $200 |
| Lead, St. Louis | 16.80 |
| Lead, New York | 17.00 |
| Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb | 24.50 |
| Magnesium, sticks, 100 to 500 lb | 42.00 to 44.00 |
| Mercury, dollars per 76-lb flask, f.o.b. New York | $195-$200 |
| Nickel electro, f.o.b. N.Y. warehouse | 59.58 |
| Nickel oxide sinter, at Copper Cliff, Ont., contained nickel | 52.75 |
| Palladium, dollars per troy oz. | $24.00 |
| Platinum, dollars per troy oz. | $90 to $93 |
| Silver, New York, cents per oz. | 90.16 |
| Tin, New York | $1.03 |
| Titanium, sponge | $5.00 |
| Zinc, East St. Louis | 17.50 |
| Zinc, New York | 18.25 |
| Zirconium copper, 50 pct | $6.20 |

## REMELTED METALS

### Brass Ingot

*(Cents per lb, delivered carloads)*

| | |
|---|---|
| 85-5-5-5 ingot | |
| No. 115 | 29.00 |
| No. 120 | 28.50 |
| No. 123 | 28.00 |
| 80-10-10 ingot | |
| No. 305 | 34.00 |
| No. 315 | 32.00 |
| 88-10-2 ingot | |
| No. 210 | 40.00 |
| No. 215 | 38.50 |
| No. 245 | 37.00 |
| Yellow ingot | |
| No. 405 | 25.50 |
| Manganese bronze | |
| No. 421 | 32.75 |

### Aluminum Ingot

*(Cents per lb, 10,000 lb and over)*

| | |
|---|---|
| 95-5 aluminum-silicon alloys | |
| 0.30 copper, max. | 20.6 |
| 0.60 copper, max. | 20.4 |
| Piston alloys (No. 122 type) | 21.2 |
| No. 12 alum. (No. 2 grade) | 19.5 |
| 108 alloy | 20.6 |
| 195 alloy | 20.8 |
| 13 alloy | 20.8 |
| ASX-679 | 20.5 |

Steel deoxidizing aluminum, notch-bar granulated or shot

| | |
|---|---|
| Grade 1—95-97½% | 18.00 |
| Grade 2—92-95% | 17.75 |
| Grade 3—90-92% | 17.25 |
| Grade 4—85-90% | 16.50 |

## ELECTROPLATING SUPPLIES

### Anodes

*(Cents per lb, freight allowed, 500 lb lots)*

| | |
|---|---|
| Copper | |
| Cast, oval, 15 in. or longer | 37.84 |
| Electrodeposited | 33⅜ |
| Flat rolled | 38.34 |
| Forged ball anodes | 43 |
| Brass, 80-20 | |
| Cast, oval, 15 in. or longer | 34¾ |
| Zinc, oval | 26½ |
| Ball anodes | 25½ |
| Nickel 99 pct plus | |
| Cast | 76.00 |
| Rolled, depolarized | 77.00 |
| Cadmium | $2.80 |
| Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. | 97½ |

### Chemicals

*(Cents per lb, f.o.b. shipping points)*

| | |
|---|---|
| Copper cyanide, 100 lb drum | 63 |
| Copper sulfate, 99.5 crystals, bbl. | 12.85 |
| Nickel salts, single or double, 4-100 lb bags, frt. allowed | 20½ |
| Nickel chloride, 375 lb drum | 27½ |
| Silver cyanide, 100 oz lots, per oz | 67¼ |
| Sodium cyanide, 96 pct domestic 200 lb drums | 19.25 |
| Zinc cyanide, 100 lb drum | 47.7 |

## SCRAP METALS

### Brass Mill Scrap

*(Cents per pound, add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)*

| | Heavy | Turnings |
|---|---|---|
| Copper | 21½ | 20¾ |
| Yellow Brass | 19⅛ | 17⅞ |
| Red brass | 20⅛ | 19⅝ |
| Comm. bronze | 20½ | 19¾ |
| Mang. bronze | 18½ | 17¾ |
| Brass rod ends | 18⅞ | .... |

### Custom Smelters' Scrap

*(Cents per pound, carload lots, delivered to refinery)*

| | |
|---|---|
| No. 1 copper wire | 19.25 |
| No. 2 copper wire | 17.75 |
| Light copper | 16.50 |
| Refinery brass | 17.25* |
| Radiators | 15.50 |

* Dry copper content.

### Ingot Makers' Scrap

*(Cents per pound, carload lots, delivered to refinery)*

| | |
|---|---|
| No. 1 copper wire | 19.25 |
| No. 2 copper wire | 17.75 |
| Light copper | 16.50 |
| No. 1 composition | 19.50 |
| No. 1 comp. turnings | 19.25 |
| Rolled brass | 15.50 |
| Brass pipe | 16.50 |
| Radiators | 15.50 |
| *Aluminum* | |
| Mixed old cast | 9.75 |
| Mixed new clips | 11.00 |
| Mixed turnings, dry | 9.50 |
| Pots and pans | 9.25 |

### Dealers' Scrap

*(Dealers' buying prices, f.o.b. New York in cents per pound)*

| | |
|---|---|
| **Copper and Brass** | |
| No. 1 heavy copper and wire | 18¾—19¼ |
| No. 2 heavy copper and wire | 17¼—17¾ |
| Light copper | 16 —16½ |
| New type shell cuttings | 16 —16½ |
| Auto radiators (unsweated) | 14¼—14¾ |
| No. 1 composition | 18 —18½ |
| No. 1 composition turnings | 17¾—18 |
| Unlined red car boxes | 16¾—17¼ |
| Cocks and faucets | 15½—16 |
| Mixed heavy yellow brass | 12 —12½ |
| Old rolled brass | 15 —15½ |
| Brass pipe | 16 —16½ |
| New soft brass clippings | 16 —16½ |
| Brass rod ends | 15½—16 |
| No. 1 brass rod turnings | 15 —15½ |
| **Aluminum** | |
| Alum. pistons and struts | 6½— 7½ |
| Aluminum crankcases | 7½— 8 |
| 2S aluminum clippings | 10½ |
| Old sheet and utensils | 7½— 8 |
| Borings and turnings | 5 — 6 |
| Misc. cast aluminum | 7½— 8 |
| Dural clips (24S) | 10 —11 |
| **Zinc** | |
| New zinc clippings | 12¼—12½ |
| Old zinc | 9 — 9¼ |
| Zinc routings | 5¾— 6 |
| Old die cast scrap | 5¾— 6 |
| **Nickel and Monel** | |
| Pure nickel clippings | 35 —36 |
| Clean nickel turnings | 35 —36 |
| Nickel anodes | 35 —36 |
| Nickel rod ends | 35 —36 |
| New Monel clippings | 28 —29 |
| Clean Monel turnings | 20 —21 |
| Old sheet Monel | 28 —29 |
| Nickel silver clippings, mixed | 13 —14 |
| Nickel silver turnings, mixed | 12 —13 |
| **Lead** | |
| Soft scrap, lead | 14 —14½ |
| Battery plates (dry) | 9½—10 |
| **Magnesium** | |
| Segregated solids | 15 —16 |
| Castings | 14 —15 |
| **Miscellaneous** | |
| Block tin | 85 —90 |
| No. 1 pewter | 60 —65 |
| No. 1 auto babbitt | 48 —50 |
| Mixed common babbitt | 16¼—16⅜ |
| Solder joints | 23 —24 |
| Siphon tops | 48 —50 |
| Small foundry type | 20½—21 |
| Monotype | 18¼—18⅜ |
| Lino. and stereotype | 17½—18 |
| Electrotype | 15 —15⅜ |
| Hand picked type shells | 8¾— 9 |
| Lino. and stereo. dross | 8¾— 9 |
| Electro. dross | 5 — 5¼ |

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# SCRAP *iron and steel*

*markets*
*prices*
*trends*

**Junked jalopy gets spotlight . . . NPA and wreckers push scrap flow at meetings . . . Cleveland steelmaking suffers.**

The junked jalopy is getting more attention as the pinch for iron and steel scrap becomes more painful. Auto graveyards have been a top-notch source of scrap and their importance is growing.

National Production Authority and Automobile Wreckers Assn. estimate that auto graveyards could contribute at least 3 million tons of scrap annually. NPA field offices are meeting with branches of the wreckers' association to meet this goal and perhaps surpass it.

An example of the wrecker's will to keep the scrap moving comes from Cleveland. At the beginning of the year wreckers turned in about 500 tons a week. After the local NPA office had stated the crisis and the need, wreckers contributed 2500 tons a week. This rate may drop but it shows the benefits of a good pep talk.

Bethlehem Steel Co. is going to the auto graveyard to partially prepare car hulks. This is not a new source of scrap, naturally. Dealers dislike the idea of a consumer bypassing them to deal directly with the source. But Bethlehem insists that it has good intentions and wants the scrap trade to take over the act. (See p. 89.)

Cleveland steel production is suffering for lack of scrap. Some blast furnaces dropping out of production for repairs are aggravating the situation.

Scrapped freight car wheels from now on may be used only in the production of new cast iron car wheels under NPA's amended order M-64.

**PITTSBURGH**—If the trend continues, scrap allocations will apparently run like steel allocations—at 100 pct. The fact that many dealers who have only No. 2 scrap to ship are getting allocations orders points this way. It also shows that open market scrap is almost extinct. Allocations bite deep — home (revert) scrap from one mill has even been allocated to another company's mill hundreds of miles away.

**CHICAGO**—Scrap movement in the Chicago area is flowing at about the same rate as the past several weeks with mills unable to appreciably build up any inventories. Good heavy melting steel remains scarce while blast furnace and cast are in relatively easy supply. Some sources doubt whether a national scrap drive will unearth sufficient scrap to give winter steelmaking a big boost. Most industries that had any scrap accumulation were pretty well cleaned out before price controls were put on because of the high prices they were able to obtain for the material.

**PHILADELPHIA**—Most of last month's big batch of allocations, estimated at 20,000 tons, have been cleared up by now and the latest word is an allocation of steel scrap from this district to the West. The trade cannot understand this in view of the inventory position of mills in this district. Yard intake, which has been extremely poor for the past couple of weeks, is expected to improve in another month. Collectors have not been busy.

**NEW YORK** — Dealers here say that they have not yet seen any substantial results of the nationwide industrial scrap drive. Some feel that every little bit of scrap will help in the lean months ahead while others say this source of dormant scrap has been pretty well dried out. Allocations from this district continue to show strength. Some dealers say that the junkie may have been tied down by the oppressive heat but cool weather is ahead.

**DETROIT**—There is little change in the scrap market here this week. For all practical purposes openhearth and electric furnace bundles are under complete allocation. Meanwhile, with the slackening pace of new car production there is little evidence that local mills will be able to build up necessary inventories to carry them through winter months at the present high operating rate.

**CLEVELAND** — The only easing of scrap conditions here seems to be in cast iron grades. Allocations of local uproote streetcar rails are benefiting some of th foundries and is diverting some of th allocations from the West Coast to othe critical areas. Some dealers feel scra traffic is a little slower than last week Another blast furnace (American Steel Wire) is scheduled to be out of blas for relining around Sept. 1. Productio at several mills has been cut down du to lack of scrap. At Timken, where pro duction was down 1900 tons 2 weeks ag there was little improvement. One open hearth was down for 72 hours for lac of quantity scrap.

**BIRMINGHAM** — Allocation of heav melting scrap is bringing enough into th district to meet immediate needs but i insufficient to permit stockpiling. Found ries that have been aloof to offers o cast scrap are buying again but hav found that much of this material ha gone to northern markets. Electric fur nace scrap also is becoming more scarce

**ST. LOUIS**—Scrap iron held by yar dealers in this market is being allocate from this district to mills in Ohio. Rail road material also is being allocated t consumers farther East. This movement has caused district melters to lose ground in their inventories, although their situa tion is said to be better than in some other sections. Foundry grades are slug gish, and such buying is on a truck-load basis. Shipments to the district continue light.

**CINCINNATI**—Good news here comes from the foundries where they are better off than they have been in weeks. Two of them had to refuse allocations. Only after considerable jockeying around of allocations was Armco's Middletown plant able to keep in production. According to one buyer they have never been so close to shutting down as they were last week. Blast and openhearth grades are still being fed car to furnace.

**BOSTON** — With the vacation period nearly over, dealers are expecting even more activity in both scrap and cast. Actually the cast market has softened slightly as the mills piled up some inventory during the vacation season, but brokers believe all markets will hum with activity after Labor Day.

**BUFFALO**—Two leading mills here have made sizeable additions to scrap stockpiles. Reserves are improving despite falling off of water shipments. Bethlehem's Lackawanna plant was busy unloading a great number of cars which accumulated because of the shutdown.



Official Air Force photo, released by Dept. of Defense

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Iron and Steel

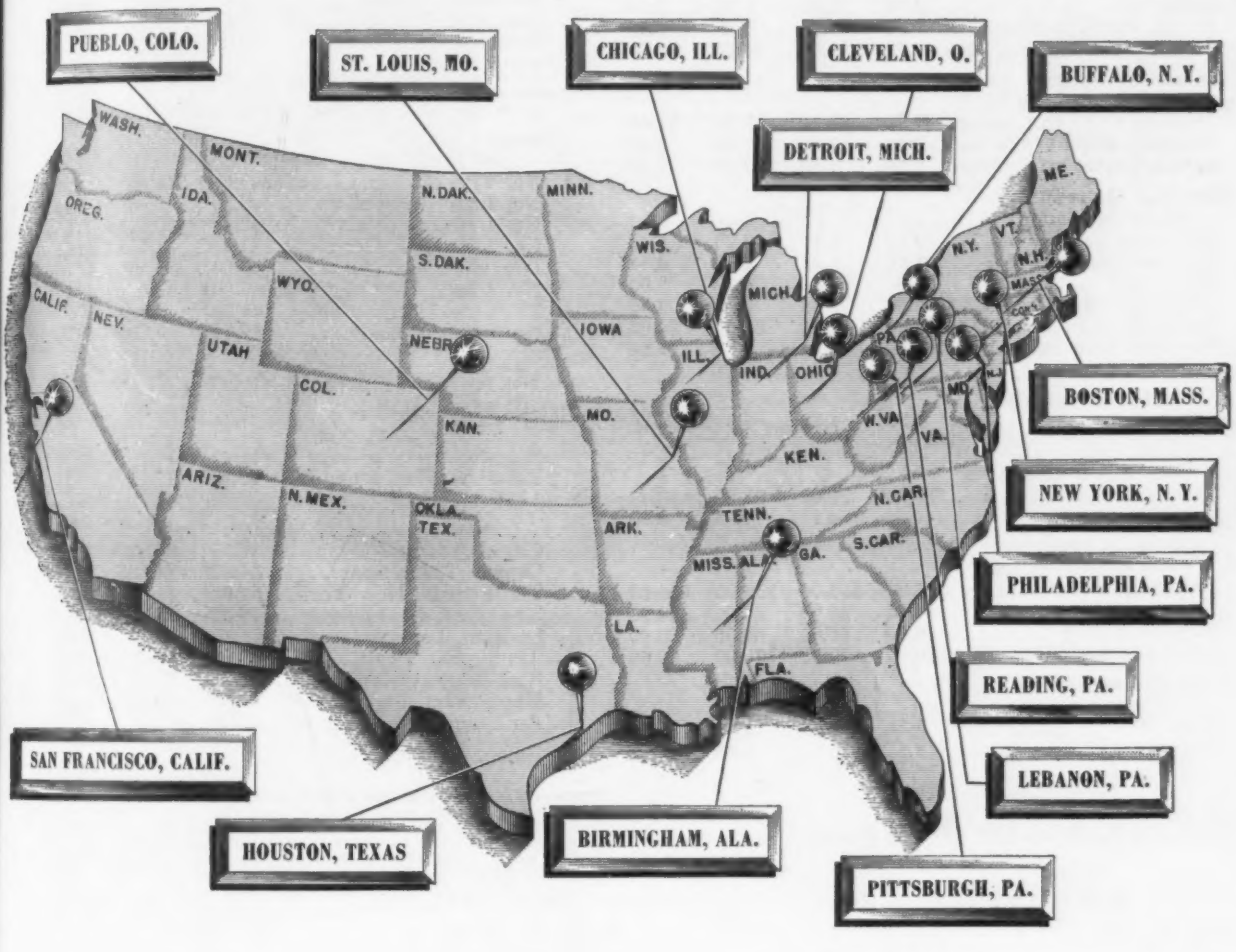
# SCRAP PRICES

(Maximum basing point prices, per gross ton, set by OPS, effective Feb. 7, 1951. Shipping point and delivered prices calculated as shown below.)

| Switching Charge (Dollars per gross ton) → | | $0.99 | .75 | .63 | .65 | .75 | .51 | .75 | .75 | .51 | .76 | .63 | .65 | .26 | 1.34 | .79 | .50 | .20 | .51 | .51 | .20 | .52 | .47 | .51 | .51 | .51

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**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**

# Comparison of Prices

**Steel prices in this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.**

| Flat-Rolled Steel: (cents per pound) | Aug. 28, 1951 | Aug. 21, 1951 | July 31, 1951 | Aug. 29, 1950 |
|---|---|---|---|---|
| Hot-rolled sheets | 3.60 | 3.60 | 3.60 | 3.35 |
| Cold-rolled sheets | 4.35 | 4.35 | 4.35 | 4.10 |
| Galvanized sheets (10 ga) | 4.80 | 4.80 | 4.80 | 4.40 |
| Hot-rolled strip | 3.50 | 3.50 | 3.50 | 3.25 |
| Cold-rolled strip | 4.75 | 4.75 | 4.75 | 4.21 |
| Plate | 3.70 | 3.70 | 3.70 | 3.50 |
| Plates wrought iron | 7.85 | 7.85 | 7.85 | 7.85 |
| Stains C-R strip (No. 302) | 36.75 | 36.75 | 36.75 | 34.50 |
| **Tin and Ternplate:** (dollars per base box) | | | | |
| Tinplate (1.50 lb.) cokes. | $8.70 | $8.70 | $8.70 | $7.50 |
| Tinplate, electro (0.50 lb.) | 7.40 | 7.40 | 7.40 | 6.60 |
| Special coated mfg. ternes | 7.50 | 7.50 | 7.50 | 6.35 |
| **Bars and Shapes:** (cents per pound) | | | | |
| Merchant bars | 3.70 | 3.70 | 3.70 | 3.45 |
| Cold finished bars | 4.55 | 4.55 | 4.55 | 4.145 |
| Alloy bars | 4.30 | 4.30 | 4.30 | 3.95 |
| Structural shapes | 3.65 | 3.65 | 3.65 | 3.40 |
| Stainless bars (No.302) | 31.50 | 31.50 | 31.50 | 30.00 |
| Wrought iron bars | 9.50 | 9.50 | 9.50 | 9.50 |
| **Wire:** (cents per pound) | | | | |
| Bright wire | 4.85 | 4.85 | 4.85 | 4.50 |
| **Rails:** (dollars per 100 lb) | | | | |
| Heavy rails | $3.60 | $3.60 | $3.60 | $3.40 |
| Light rails | 4.00 | 4.00 | 4.00 | 3.75 |
| **Semifinished Steel:** (dollars per net ton) | | | | |
| Rerolling billets | $56.00 | $56.00 | $56.00 | $54.00 |
| Slabs, rerolling | 56.00 | 56.00 | 56.00 | 54.00 |
| Forging billets | 66.00 | 66.00 | 66.00 | 63.00 |
| Alloy blooms billets, slabs | 70.00 | 70.00 | 70.00 | 66.00 |
| **Wire Rod and Skelp:** (cents per pound) | | | | |
| Wire rods | 4.10 | 4.10 | 4.10 | 3.85 |
| Skelp | 3.35 | 3.35 | 3.35 | 3.15 |

**Price advances over previous week are printed in Heavy Type; declines appear in *Italics***

| Pig Iron: (per gross ton) | Aug. 28, 1951 | Aug. 21, 1951 | July 31, 1951 | Aug. 29, 1950 |
|---|---|---|---|---|
| No. 2 foundry, del'd Phila. | $57.77 | $57.77 | $57.77 | $51.76 |
| No. 2, Valley furnace | 52.50 | 52.50 | 52.50 | 46.50 |
| No. 2, Southern Cin'ti | 55.58 | 55.58 | 55.58 | 49.08 |
| No. 2, Birmingham | 48.88 | 48.88 | 48.88 | 42.38 |
| No. 2, foundry, Chicago† | 52.50 | 52.50 | 52.50 | 46.50 |
| Basic del'd Philadelphia | 56.92 | 56.92 | 56.92 | 50.92 |
| Basic, Valley furnace | 52.00 | 52.00 | 52.00 | 46.00 |
| Malleable, Chicago† | 52.50 | 52.50 | 52.50 | 46.50 |
| Malleable, Valley | 52.50 | 52.50 | 52.50 | 46.50 |
| Charcoal, Chicago | 70.56 | 70.56 | 70.56 | 63.56 |
| Ferromanganese‡ | 186.25 | 186.25 | 186.25 | 173.40 |

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

| Scrap: (per gross ton) | Aug. 28, 1951 | Aug. 21, 1951 | July 31, 1951 | Aug. 29, 1950 |
|---|---|---|---|---|
| No. 1 steel, Pittsburgh | $44.00* | $44.00* | $44.00* | $43.75 |
| No. 1 steel, Phila. area | 42.50* | 42.50* | 42.50* | 38.50 |
| No. 1 steel, Chicago | 42.50* | 42.50* | 42.50* | 40.50 |
| No. 1 bundles, Detroit | 41.15* | 41.15* | 41.15* | 40.50 |
| Low phos. Young'n | 46.50* | 46.50* | 46.50* | 46.75 |
| No. 1 cast, Pittsburgh | 49.00† | 49.00† | 49.00† | 48.75 |
| No. 1 cast, Philadelphia | 49.00† | 49.00† | 49.00† | 43.50 |
| No. 1 cast, Chicago | 49.00† | 49.00† | 49.00† | 50.50 |

*Basing Pt. †Shipping Pt.
Not including broker's fee after Feb. 7, 1951.

| Coke: Connellsville: (per net ton at oven) | Aug. 28, 1951 | Aug. 21, 1951 | July 31, 1951 | Aug. 29, 1950 |
|---|---|---|---|---|
| Furnace coke, prompt | $14.75 | $14.75 | $14.75 | $14.25 |
| Foundry coke, prompt | 17.75 | 17.75 | 17.75 | 16.25 |
| **Nonferrous Metals:** (cents per pound to large buyers) | | | | |
| Copper, electro, Conn. | 24.50 | 24.50 | 24.50 | 22.60 |
| Copper, Lake, Conn. | 24.625 | 24.625 | 24.625 | 24.625 |
| Tin, Straits, New York | $1.03† | $1.03 | $1.06 | $1.02 |
| Zinc, East St. Louis | 17.50 | 17.50 | 17.50 | 15.00 |
| Lead, St. Louis | 16.80 | 16.80 | 16.80 | 13.80 |
| Aluminum, virgin | 19.00 | 19.00 | 19.00 | 17.50 |
| Nickel, electrolytic | 59.58 | 59.58 | 59.58 | 51.22 |
| Magnesium, ingot | 24.50 | 24.50 | 24.50 | 22.50 |
| Antimony, Laredo, Tex. | 42.00 | 42.00 | 42.00 | 24.50 |

†Tentative. *Revised.

# Composite Prices

**Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)**

| | Finished Steel Base Price | Pig Iron | Scrap Steel |
|---|---|---|---|
| Aug. 28, 1951 | 4.131¢ per lb. | $52.69 per gross ton | $43.00 per gross ton |
| One week ago | 4.131¢ per lb. | 52.69 per gross ton | 43.00 per gross ton |
| One month ago | 4.131¢ per lb. | 52.69 per gross ton | 43.00 per gross ton |
| One year ago | 3.837¢ per lb. | 46.61 per gross ton | 40.92 per gross ton |

| | Finished Steel High | Finished Steel Low | Pig Iron High | Pig Iron Low | Scrap Steel High | Scrap Steel Low |
|---|---|---|---|---|---|---|
| 1951 | 4.131¢ Jan. 2 | 4.131¢ Jan. 2 | $52.69 Jan. 2 | $52.69 Jan. 2 | $47.75 Jan. 30 | $43.00 Feb. |
| 1950 | 4.131¢ Dec. 1 | 3.837¢ Jan. 3 | 52.69 Dec. 12 | 45.88 Jan. 3 | 45.13 Dec. 19 | 26.25 Jan. |
| 1949 | 3.837¢ Dec. 27 | 3.3705¢ May 3 | 46.87 Jan. 18 | 45.88 Sept. 6 | 43.00 Jan. 4 | 19.33 June |
| 1948 | 3.721¢ July 27 | 3.193¢ Jan. 1 | 46.91 Oct. 12 | 39.58 Jan. 6 | 43.16 July 27 | 39.75 Mar. |
| 1947 | 3.193¢ July 29 | 2.848¢ Jan. 1 | 37.98 Dec. 30 | 30.14 Jan. 7 | 42.58 Oct. 28 | 29.50 May |
| 1946 | 2.848¢ Dec. 31 | 2.464¢ Jan. 1 | 30.14 Dec. 10 | 25.37 Jan. 1 | 31.17 Dec. 24 | 19.17 Jan. |
| 1945 | 2.464¢ May 29 | 2.396¢ Jan. 1 | 25.37 Oct. 23 | 23.61 Jan. 2 | 19.17 Jan. 2 | 18.92 May |
| 1944 | 2.396¢ | 2.396¢ | $23.61 | $23.61 | 19.17 Jan. 11 | 15.76 Oct. |
| 1943 | 2.396¢ | 2.396¢ | 23.61 | 23.61 | $19.17 | $19.17 |
| 1942 | 2.396¢ | 2.396¢ | 23.61 | 23.61 | 19.17 | 19.17 |
| 1941 | 2.396¢ | 2.396¢ | $23.61 Mar. 20 | $23.45 Jan. 2 | $22.00 Jan. 7 | $19.17 Apr. |
| 1940 | 2.30467¢ Jan. 2 | 2.24107¢ Apr. 16 | 23.45 Dec. 23 | 22.61 Jan. 2 | 21.83 Dec. 30 | 16.04 Apr. |
| 1939 | 2.35367¢ Jan. 3 | 2.26689¢ May 16 | 22.61 Sept. 19 | 20.61 Sept. 12 | 22.50 Oct. 3 | 14.08 May |
| 1938 | 2.58414¢ Jan. 4 | 2.27207¢ Oct. 18 | 23.25 June 21 | 19.61 July 6 | 15.00 Nov. 22 | 11.00 June |
| 1937 | 2.58414¢ Mar. 9 | 2.32263¢ Jan. 4 | 32.25 Mar. 9 | 20.25 Feb. 16 | 21.92 Mar. 30 | 12.67 June |
| 1936 | 2.32263¢ Dec. 28 | 2.05200¢ Mar. 10 | 19.74 Nov. 24 | 18.73 Aug. 11 | 17.75 Dec. 21 | 12.67 June |
| 1932 | 1.89196¢ July 5 | 1.83910¢ Mar. 1 | 14.81 Jan. 5 | 13.56 Dec. 6 | 8.50 Jan. 12 | 6.43 July |
| 1929 | 2.31773¢ May 28 | 2.26498¢ Oct. 29 | 18.71 May 14 | 18.21 Dec. 17 | 17.58 Jan. 29 | 14.08 Dec. |

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.



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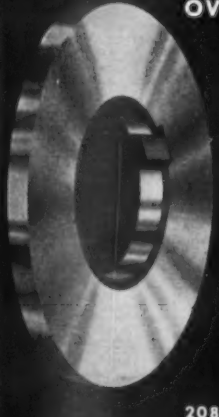
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# STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

| | Pittsburgh | Chicago | Gary | Cleveland | Canton Massillon | Middletown | Youngstown | Bethlehem | Buffalo | Conshohocken | Johnstown | Sparrows Point | Granite City | Detroit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INGOTS** Carbon forging, net ton | $52.00[1] | | | | | | | | | | | | | |
| Alloy, net ton | $54.00[1,17] | | | | | | | | | | | | | $54.00[81] |
| **BILLETS, BLOOMS, SLABS** Carbon, rerolling, net ton | $56.00[1,5] | $56.00[1] | $56.00[1] | | | | | | $56.00[3] | | $56.00[3] | | | |
| Carbon forging billets, net ton | $66.00[1,5] | $66.00[1,4] | $66.00[1] | $66.00[4] | $66.00[4] | | | | $66.00[3,4] | $73.00[26] | $66.00[3] | | | $69.00[11] |
| Alloy, net ton | $70.00[1,17,5] | $70.00[1,4] | $70.00[1,5] | | $70.00[4] | | | $70.00[3] | $70.00[3,4] | $77.00[26] | $70.00[3] | | | $73.00[81] |
| **PIPE SKELP** | 3.35[1]<br>3.45[5] | | | | | | 3.35[1,4] | | | | | | | |
| **WIRE RODS** | 4.10[2]<br>4.30[18] | 4.10[2,4,33] | 4.10[6] | 4.10[2] | | | 4.10[6] | | 4.10[63] | | 4.10[3] | 4.20[3] | | |
| **SHEETS** Hot-rolled (18 ga. & hvr.) | 3.60[1,5,9,15]<br>3.75[28] | 3.60[6,23] | 3.60[1,6,9] | 3.60[4,5] | | 3.60[7] | 3.60[1,4,6]<br>4.00[13] | | 3.60[3] | 4.00[26] | | 3.60[3] | 4.30[33] | 3.80[13]<br>4.40[47] |
| Cold-rolled | 4.35[1,5,9,15,7] | | 4.35[1,6,9] | 4.35[4,5] | | 4.35[7] | 4.35[4,6] | | 4.35[3] | | | 4.35[3] | 5.05[33] | 4.55[12] |
| Galvanized (10 gage) | 4.80[1,9,15] | | 4.80[1,9] | | 4.80[4] | 4.80[7] | 5.50[44]<br>6.00[64] | | | | | 4.80[3] | 5.50[33] | |
| Enameling (12 gage) | 4.65[1] | | 4.65[1,9] | 4.65[4] | | 4.65[7] | 4.65[6] | | | | | | 5.35[33] | |
| Long terne (10 gage) | 5.20[9,15] | | 5.20[1] | | | 5.20[7] | 6.00[64] | | | | | | | |
| Hi str. low alloy, h.r. | 5.40[1,5]<br>5.75[9] | 5.40[1] | 5.40[1,6]<br>5.90[6] | 5.40[4,5] | | | 5.40[1,4,13]<br>5.90[6] | | 5.40[3] | 5.65[26] | | 5.40[3] | | 5.95[12] |
| Hi str. low alloy, c.r. | 6.55[1,5]<br>6.90[9] | | 6.55[1,6]<br>7.05[6] | 6.55[4,5] | | | 6.55[4]<br>7.05[6] | | 6.55[3] | | | 6.55[3] | | 7.10[12] |
| Hi str. low alloy, galv. | 7.20[1] | | | | | | | | | | | 6.75[3] | | |
| **STRIP** Hot-rolled | 3.60[9], 4.00[41,58], 3.75[28]<br>3.50[5,7] | 3.50[66] | 3.50[1,6,9] | | | 3.50[7] | 3.50[1,4,6]<br>4.00[13] | | 3.50[3,4] | 3.90[26] | 3.50[3] | 3.50[3] | | 4.40[47]<br>3.80[13] |
| Cold-rolled | 4.65[5,7,9]<br>5.00[28]<br>5.35[40,63,66] | 4.90[6,66] | 4.90[6] | 4.65[2,5] | | 4.65[7] | 4.65[4,6]<br>5.25[48,49]<br>5.35[13,40] | | 4.65[3] | | | 4.65[3] | | 4.85[12]<br>5.45[47]<br>5.60[64,81] |
| Hi str. low alloy, h.r. | 5.75[9] | | 5.50[1]<br>5.30[6] - 5.80[6] | | | | 4.95[4] - 5.50[1]<br>5.40[13], 5.80[6] | | 4.95[3] | 5.55[26] | | 4.95[3] | | 5.95[12] |
| Hi str. low alloy, c.r. | 7.20[9] | | | {6.55[2]<br>6.70[5] | | | {6.20[4], 6.55[13]<br>7.05[6] | | 6.40[3] | | | 6.40[3] | | |
| **TINPLATE†** Cokes, 1.25-lb base box (1.50 lb, add 25¢) | $8.45[1,5,9,15] | | $8.45[1,6,9] | | | | $8.45[4] | | | | | $8.55[3] | | |
| Electrolytic 0.25, 0.50, 0.75 lb box | 0.25 lb base box, $7.15[1,4,5,8,9]; $7.25[3,11]; $7.35[23]<br>0.50 lb, add 25¢; 0.75 lb add 65¢ | | | | | | | | | | | | | |
| **BLACKPLATE, 29 gage** Hollowware enameling | 5.85[1]<br>6.15[15] | | 5.85[1] | | | | 5.30[4] | | | | | | | |
| **BARS** Carbon steel | 3.70[1,5]<br>3.85[9] | 3.70[1,4,33] | 3.70[1,4,6,9] | 3.70[4] | 3.70[4] | | 3.70[1,4,6] | | 3.70[3,4] | | 3.70[3] | | | 3.85[81] |
| Reinforcing | 3.70[1,5] | 3.70[4] | 3.70[1,6,9] | 3.70[4] | | | 3.70[1,4,6] | | 3.70[3,4] | | 3.70[3] | 3.70[3] | | |
| Cold-finished | 4.55[2,4,5,52,69,71] | 4.55[2,23,70] | 4.55[4,74,75] | 4.55[2] | 4.55[4,52] | | 4.55[6,67] | | 4.60[70] | | | | | 4.70[81] |
| Alloy, hot-rolled | 4.30[1,17] | 4.30[1,4,23] | 4.30[1,6,9] | | 4.30[4] | | 4.30[1,6] | 4.30[6] | 4.30[3,4] | | 4.30[3] | | | 4.45[81]<br>4.65[12] |
| Alloy, cold-drawn | 5.40[17,52,69,71,2] | 5.40[4,23,69,70,73]<br>5.45[2] | 5.40[4,73,74] | | 5.40[4,52] | | 5.40[6,26,67] | 5.40[3] | 5.40[3] | | | | | 5.55[4] |
| Hi str. low alloy, h.r. | 5.55[1,5] | | 5.55[1,6]<br>6.05[6] | 5.55[4,5] | | | 5.55[1]<br>6.05[6] | 5.55[3] | 5.55[3] | | 5.55[3] | | | |
| **PLATE** Carbon steel | 3.70[1,5,15]<br>4.00[9] | 3.70[1,33] | 3.70[1,6,9] | 3.70[4,5] | | | 3.70[1,4,6]<br>3.95[13] | | 3.70[3] | 4.15[26] | 3.70[3] | 3.70[3] | 4.40[33] | |
| Floor plates | 4.75[1] | 4.75[1] | 4.75[6] | 4.75[5] | | | | | | 4.75[26] | | | | |
| Alloy | 4.75[1] | 4.75[1] | 4.75[1] | | | | 5.20[13] | | | 5.05[26] | 4.75[3] | 4.75[3] | | |
| Hi str. low alloy | 5.65[1,5] | 5.65[1] | 5.65[1,6]<br>6.15[6] | 5.65[4,5] | | | {5.65[4]<br>5.70[13]<br>6.15[6] | | | 5.90[26] | 5.65[3] | 5.65[3] | | |
| **SHAPES, Structural** | 3.65[1,5]<br>3.90[9] | 3.65[1,23] | 3.65[1,5] | | | | | 3.70[3] | 3.70[3] | | 3.70[3] | | | |
| Hi str. low alloy | 5.50[1,5] | 5.50[1] | 5.50[1,6]<br>6.00[6] | | | | 6.00[6] | 5.50[3] | 5.50[3] | | 5.50[3] | | | |
| **MANUFACTURERS' WIRE** Bright | 4.85[2,5]<br>5.10[15] | 4.85[2]<br>4.33,34 | | 4.85[2] | | | 4.85[6] | Kokomo—4.95[20]<br>4.85[35] | | | 4.85[3] | 4.95[3] | Duluth—4.85[2] | |
| **PILING, Steel Sheet** | 4.45[1] | 4.45[1] | 4.45[6] | | | | | | 4.45[3] | | | | | |



UNIVERSITY OF MICHIGAN LIBRARIES

# STEEL PRICES

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

| Kansas City | Houston | Birmingham | WEST COAST Seattle, San Francisco, Los Angeles, Fontana | | |
|---|---|---|---|---|---|
| | | | F=$79.00[19] | | INGOTS Carbon forging, net ton |
| | $82.00[83] | | F=$80.00[19] | | Alloy, net ton |
| | | $56.00[11] | F=$75.00[19] | | BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton |
| | $74.00[83] | $66.00[11] | F=$85.00[19] SF, LS, S=$85.00[62] | Geneva=$66.00[16] | Carbon forging billets, net ton |
| | $78.00[83] | | F=$89.00[19] LA=$90.00[62] | | Alloy net ton |
| | | | | | PIPE SKELP |
| | 4.50[83] | 4.10[4-11] | SF=4.90[3], F=4.90[19] LA=4.90[24-62] | Worcester=4.40[2] Minnequa=4.35[14] Portsmouth=4.30[20] | WIRE RODS |
| | | 3.60[4-11] | SF, LA=4.30[24] F=4.55[19] | Niles=5.25[84], Geneva=3.70[16] Ashland=3.60[7] | SHEETS Hot-rolled (18 ga. & hvr.) |
| | | 4.35[11] | SF=5.30[24] F=5.30[19] | | Cold-rolled |
| | | 4.80[4-11] | SF, LA=5.55[24] | Ashland=4.80[7] Kokomo=5.20[30] | Galvanized (10 gage) |
| | | | | Ashland=4.65[7] | Enameling (12 gage) |
| | | | | | Long ternes (10 gage) |
| | | 5.40[11] | F=6.35[19] | | Hi str. low alloy, h.r. |
| | | | F=7.50[19] | | Hi str. low alloy, c.r. |
| | | | | | Hi str. low alloy, galv. |
| 4.10[83] | 4.90[83] | 3.50[4-11] | SF, LA=4.25[24-62] F=4.75[19], S=4.50[62] | Atlanta=4.05[83] Minnequa=4.55[14] Ashland=3.50[7] | STRIP Hot-rolled |
| | | | F=6.30[19] LA=6.40[27] | New Haven=5.15[3], 5.85[68] Trenton=6.00[48] | Cold-rolled |
| | | 5.30[11] | F=6.20[19] SF, LA=6.05[62] S=6.30[62] | | Hi str. low alloy, h.r. |
| | | | F=6.95[19] | | Hi str. low alloy, c.r. |
| | | $8.55[11] | SF=9.20[24] | | TINPLATE Cokes, 1.25-lb base box (1.50 lb, add 25¢) |
| | | | | | Electrolytic 0.25, 0.50, 0.75 lb box |
| | | | | | BLACKPLATE, 29 gage Hollowware enameling |
| 4.30[83] | 4.10[83] | 3.70[4-11] | SF, LA=4.40[24] | Atlanta=4.25[85] Minnequa=4.15[14] | BARS Carbon steel |
| 4.30[83] | 4.10[83] | 3.70[4-11] | SF, S=4.45[62] F=4.40[19], LA=4.40[62] | Atlanta=4.25[85] Minnequa=4.50[14] | Reinforcing |
| | | | LA=6.00[4] | Newark=5.00[89] Putnam=5.10[69] Hartford=5.10[4] | Cold-finished |
| 4.90[83] | 4.70[83] | | LA=5.35[62] F=5.35[19] | | Alloy, hot-rolled |
| | | | | Newark=5.75[89] Worcester=5.75[2] Hartford=5.85[4] | Alloy, cold-drawn |
| | | 5.55[11] | F=6.60[19] SF, S=6.30[62] LA=6.25[62] | Claymont=4.15[39] Coatesville=4.15[21] Harrisburg=4.95[38] Minnequa=4.50[14] Geneva=3.70[16] | Hi str. low alloy, h.r. |
| | 4.10[83] | 3.70[4-11] | F=4.30[19] S=4.60[62] | | PLATE Carbon steel |
| | | | | Harrisburg=5.95[38] | Floor plates |
| | | | F=5.70[19] | Coatesville=5.25[21] Claymont=4.85[39] | Alloy |
| | | 5.65[11] | F=6.25[19] S=6.55[62] | Geneva=5.65[16] | Hi str. low alloy |
| 4.25[83] | 4.05[83] | 3.60[4] 3.65[11] | SF=4.20[62] F=4.25[16] LA=4.25[24-62] S=4.30[62] | Geneva 3.65[16] Minnequa 4.10[14] Phoenixville=4.95[58] | SHAPES, Structural |
| | | 5.50[11] | SF=6.10[62-19] SF=6.00[62] LA=6.05[62] | Geneva=5.50[16] | Si str. low alloy |
| 5.45[83] | 5.25[83] | 4.35[4-11] | SF, LA=5.80[24] | Atlanta=5.10[85] Worcester=5.15[2] Minnequa=5.10[14] Portsmouth=5.25[20] | MANUFACTURERS' WIRE Bright |

†Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $2.20 from 1.25-lb coke base box.

## Key to Steel Producers

1 U. S. Steel Co., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calstrip Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Claymont Steel Corp., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling St. & Carbide Corp., McKeesport
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Fran.
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wycoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit
85 Wickwire Spencer Steel, Buffalo
86 Angell Nail and Chaplet, Cleveland
87 Mid-States Steel & Wire, Crawfordsville, Ind.
88 National Supply, Pittsburgh, Pa.
89 Wheatland Tube Co., Wheatland, Pa.
90 Mercer Tube & Mfg. Co., Sharon, Pa.
91 Woodward Iron Co., Woodward, Ala.
92 Sloss-Sheffield Steel & Iron Co., Birmingham
93 Hanna Furnace Corp., Detroit
94 Interlake Iron Corp., Cleveland
95 Lone Star Steel Co., Dallas
96 Mystic Iron Works, Everett, Mass.
97 Jackson Iron & Steel Co., Jackson, O.
98 Globe Iron Co., Jackson, O.
99 Pittsburgh Coke & Chemical Co., Pittsburgh
100 Shenango Furnace Co., Pittsburgh
101 Tennessee Products & Chem. Corp., Nashville
102 Koppers Co., Inc., Granite City, Ill.
103 Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
104 Wallingford Steel Co., Wallingford, Conn.
105 Tonawanda Iron Div., N. Tonawanda, N. Y.

## STAINLESS STEELS

Base price cents per lb, f.o.b. mill.

| Product | 301 | 302 | 303 | 304 | 316 | 321 | 347 | 410 | 416 | 430 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ingots rerolling | 14.25 | 15.25 | 16.75 | 16.25 | 24.75 | 20.00 | 21.75 | 12.75 | 14.75 | 13.00 |
| Slabs billets rerolling | 18.50 | 20.00 | 22.00 | 21.00 | 32.25 | 26.25 | 28.50 | 16.50 | 20.00 | 16.75 |
| Forg. discs die blocks rings | 34.00 | 34.25 | 36.75 | 35.75 | 53.00 | 40.25 | 44.75 | 28.00 | 28.50 | 28.50 |
| Billets forging | 26.25 | 26.50 | 28.50 | 27.75 | 41.50 | 31.25 | 35.00 | 21.50 | 22.00 | 22.00 |
| Bars wires structurals | 31.25 | 31.50 | 34.00 | 33.00 | 49.25 | 37.00 | 41.50 | 25.75 | 26.25 | 26.25 |
| Plates | 33.00 | 33.25 | 35.25 | 35.25 | 52.00 | 40.75 | 45.25 | 27.00 | 27.50 | 27.50 |
| Sheets | 41.00 | 41.25 | 43.25 | 43.25 | 57.00 | 49.25 | 53.75 | 36.50 | 37.00 | 39.00 |
| Strip hot-rolled | 26.50 | 28.25 | 32.50 | 30.25 | 48.75 | 37.00 | 41.25 | 23.50 | 30.25 | 24.00 |
| Strip cold-rolled | 34.00 | 36.75 | 40.25 | 38.75 | 59.00 | 48.25 | 52.25 | 30.50 | 37.00 | 31.00 |

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 4, 5¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 45.

*Strip:* Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38 (type 316 add 4, 5¢); W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, Pa., 13; Butler, Pa., 7; Wallingford, Conn., 104.

*Bars:* Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

*Wire:* Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.

*Structurals:* Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.

*Plates:* Brackenridge, Pa., 28 (type 416 add ½¢); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

*Forged discs, die blocks, rings:* Pittsburgh, 17; Syracuse, 17; Ferndale, Mich., 28; Washington, Pa., 39.

*Forging billets:* Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

*ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 Series.

WASHINGTON STEEL—Slightly lower on 300 Series except where noted.

## RAILS, TRACK SUPPLIES

| F.o.b. Mill Cents Per Lb | No. 1 Std. Rails | Light Rails | Joint Bars | Track Spikes | Axles | Screw Spikes | Tie Plates | Track Bolts |
|---|---|---|---|---|---|---|---|---|
| Bessemer-1 | 3.60 | 4.00 | 4.70 | | | | | |
| Chicago-4 | | | | 6.15 | | | | |
| Ensley-11 | 3.60 | 4.00 | | | | | | |
| Fairfield-11 | | 4.00 | 4.40 | | | 8.00 | 4.50 | |
| Gary-1 | 3.60 | 4.00 | | | | | 4.50 | |
| Ind. Harbor-8 | 3.60 | | 4.70 | 6.15 | 5.60 | 8.00 | 4.50 | |
| Johnstown-3 | | 4.00 | | | 5.60 | 8.00 | | |
| Joliet-1 | | 4.00 | 4.70 | | | | | |
| Kansas City-83 | | | | 6.60 | | | | |
| Lackawanna-3 | 3.60 | 4.00 | 4.70 | | | 8.00 | 4.50 | |
| Lebanon-3 | | | | 6.15 | | | | |
| Minnequa-14 | 3.60 | 4.50 | 4.70 | 6.15 | | 8.00 | 4.50 | |
| Pittsburgh-77 | | | | | | 9.35 | | |
| Pittsburgh-78 | | | | | | | | |
| Pittsburgh-5 | | | | 6.15 | | | | |
| Pittsburgh-24 | | | | | | | 4.65 | |
| Seattle-62 | | | | 6.65 | | | 4.65 | |
| Steelton-3 | 3.60 | | 4.70 | | | | 4.50 | |
| Struthers-6 | | | | 6.15 | | | | |
| Torrance-24 | | | | | | | 4.65 | |
| Youngstown-4 | | | | 6.15 | | | | |

## BOILER TUBES

$ Per 100 ft., cut, 18 to 24

| F.o.b. Mill | Size OD-In. | Size B.W. Ga. | Seamless H.R. | Seamless C.D. | Elec. We H.R. | Elec. We C. |
|---|---|---|---|---|---|---|
| Babcock & Wilcox | 2 | 13 | 22.67 | 26.66 | 21.89 | 25. |
| | 2½ | 12 | 30.48 | 35.84 | 29.57 | 34. |
| | 3 | 12 | 33.90 | 39.90 | 32.88 | 38. |
| | 3½ | 11 | 42.37 | 49.99 | 41.10 | 48. |
| | 4 | 10 | 52.60 | 61.88 | 51.03 | 60. |
| National Tube | 2 | 13 | 21.62 | 26.48 | | |
| | 2½ | 12 | 29.65 | 36.32 | | |
| | 3 | 12 | 34.00 | 41.64 | | |
| | 3½ | 11 | 40.34 | 49.41 | | |
| | 4 | 10 | 51.21 | 62.72 | | |
| Pittsburgh Steel | 2 | 13 | | 27.00 | | |
| | 2½ | 12 | 30.49 | 37.15 | | |
| | 3 | 12 | 34.95 | 42.58 | | |
| | 3½ | 11 | 41.48 | 50.54 | | |
| | 4 | 10 | 52.65 | 64.16 | | |

## FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill.
Price, net ton; Effective $CaF_2$ content:
70% or more ..... $43.00
60% or less ..... 40.00

## MERCHANT WIRE PRODUCTS

| F.o.b. Mill | Standard & Coated Nails Base Col. | Woven Wire Fence 9-15½ ga. Base Col. | Fence Posts Base Col. | Single Loop Bale Ties Base Col. | Twisted Barbless Wire Base Col. | Gal. Barbed Wire Base Col. | Merch. Wire Ann'ld ¢/lb. | Merch. Wire Gal. (1) ¢/lb. |
|---|---|---|---|---|---|---|---|---|
| Alabama City-4 | 118 | 126 | ... | 123 | ... | 136 | 5.70 | 5.95 |
| Aliquippa, Pa.-5 | 118 | 132 | ... | ... | 136 | 140 | 5.70 | 6.15 |
| Atlanta-65 | 121 | 133 | ... | 126 | 126 | 143 | 5.95 | 6.40 |
| Bartonville-34 | 118 | 130 | ... | 123 | 143 | 143 | 5.70 | 6.15 |
| Buffalo-85 | | | | | | | 4.85 | .... |
| Cleveland-86 | 125 | | | | | | | |
| Cleveland-2 | | | | | | | 5.70 | 6.15 |
| Crawfordsville-87 | | 132 | | | | 145 | 5.95 | 6.40 |
| Donora, Pa.-2 | 118 | 130 | ... | 123 | 140 | 140 | 5.70 | 6.15 |
| Duluth-2 | 118 | 130 | ... | 123 | 140 | 140 | 5.70 | 6.15 |
| Fairfield, Ala.-11 | 118 | 130 | ... | 123 | ... | 140 | 5.70 | 6.15 |
| Houston-83 | 126 | 138 | ... | ... | ... | 148 | 6.10 | 6.55 |
| Johnstown, Pa.-3 | 118 | 130 | ... | ... | 140 | ... | 5.70 | 6.15 |
| Joliet, Ill.-2 | 118 | 130 | ... | 123 | ... | 140 | 5.70 | 6.15 |
| Kokomo, Ind.-30 | 120 | 132 | ... | 125 | 138 | 142 | 5.80 | 6.05 |
| Los Angeles-62 | | | | | | | 6.65 | |
| Kansas City-83 | 130 | | | 135 | | 152 | 6.30 | 6.75 |
| Minnequa-14 | 123 | 138 | 130 | 128 | 146 | 146 | 5.95 | 6.45 |
| Monessen-18 | 124 | 135 | ... | ... | ... | 145 | 5.95 | 6.40 |
| Moline, Ill.-4 | | | 136 | | | | | |
| Pittsburg, Cal.-24 | 137 | | | 147 | 156 | 160 | 6.65 | 6.80 |
| Portsmouth-20 | 124 | 137 | ... | ... | 147 | 147 | 6.10 | 6.60 |
| Rankin, Pa.-2 | 118 | 130 | ... | ... | 140 | 140 | 5.70 | 6.15 |
| So. Chicago, Ill.-4 | 118 | 126 | 140 | 123 | ... | 136 | 5.70 | 5.95 |
| S. San Fran.-14 | | | ... | 147 | ... | 160 | 6.65 | 7.10 |
| Sparrows Pt.-3 | 120 | | ... | 125 | 142 | 142 | 5.80 | 6.25 |
| Sterling, Ill.-33 | 118 | 130 | ... | 123 | 140 | 140 | 5.70 | 6.15 |
| Struthers, Ohio-6 | | | ... | ... | ... | ... | 5.70 | 6.15 |
| Torrance, Cal.-24 | 138 | | ... | ... | ... | ... | 6.65 | ... |
| Worcester-2 | 124 | | ... | ... | ... | ... | 6.00 | 6.45 |
| Williamsport, Pa.-51 | | | 150 | | | | | .... |

Cut Nails, carloads, base, $7.35 per 100 lb (less 20¢ to jobbers), at Conshohocken, Pa., (26), Wheeling, W. Va., (18), $7.15.

(1) Alabama City and So. Chicago do not include zinc extra.

## CAST IRON WATER PIPE

| | Per Net Ton |
|---|---|
| 6 to 24-in., del'd Chicago | $105.30 to $108.80 |
| 6 to 24-in., del'd N. Y. | 108.50 to 109.50 |
| 6 to 24-in., Birmingham | 91.50 to 96.00 |
| 6-in and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less | 123.00 to 130.00 |

Class "A" and as pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

## PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about $200 per net ton.

| | BUTTWELD ½ in. Blk. | ½ in. Gal. | ¾ in. Blk. | ¾ in. Gal. | 1 in. Blk. | 1 in. Gal. | 1¼ in. Blk. | 1¼ in. Gal. | 1½ in. Blk. | 1½ in. Gal. | 2 in. Blk. | 2 in. Gal. | 2½-3 in. Blk. | 2½-3 in. Gal. | SEAMLESS 2 in. Blk. | 2 in. Gal. | 2½-3 in. Blk. | 2½-3 in. Gal. | 3½-4 in. Blk. | 3½-4 in. Gal. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STANDARD T. & C. | | | | | | | | | | | | | | | | | | | | |
| Sparrows Pt.-3 | 34.0 | 12.0 | 37.0 | 16.0 | 39.5 | 19.5 | 40.0 | 20.0 | 40.5 | 21.0 | 41.0 | 21.5 | 41.5 | 22.0 | | | | | | |
| Cleveland-4 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.9 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | | | | | | |
| Oakland-19 | 25.0 | 3.0 | 28.0 | 7.0 | 30.5 | 10.5 | 31.0 | 11.0 | 31.5 | 12.0 | 32.0 | 12.5 | 32.5 | 13.0 | | | | | | |
| Pittsburgh-5 | 36.0 | 14.0 | 39.0 | 17.0 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | 29.5 | 8.0 | 32.5 | 11.5 | 34.5 | 12.5 |
| Pittsburgh-10 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | 29.5 | 9.5 | 32.5 | 12.5 | 34.5 | 14. |
| St. Louis-32 | 35.0 | 13.0 | 38.0 | 17.0 | 40.5 | 20.5 | 41.0 | 21.0 | 41.5 | 22.0 | 42.0 | 22.5 | 42.5 | 23.0 | | | | | | |
| Sharon-90 | 36.0 | 13.0 | 39.0 | 17.0 | 41.5 | 20.0 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.0 | | | | | | |
| Pittsburgh-88 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | 29.5 | | 32.5 | | 34.5 | |
| Wheeling-15 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | | | | | | |
| Wheatland-89 | 36.0 | 14.0 | 39.0 | 17.0 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | | | | | | |
| Youngstown-6 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | 29.5 | 9.5 | 32.5 | 12.5 | 34.5 | 14. |
| EXTRA STRONG, PLAIN ENDS | | | | | | | | | | | | | | | | | | | | |
| Sparrows Pt.-3 | 33.5 | 13.0 | 37.5 | 17.0 | 39.5 | 20.5 | 40.0 | 21.0 | 40.5 | 22.0 | 41.0 | 22.5 | 41.5 | 23.0 | | | | | | |
| Cleveland-4 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | | | | | | |
| Oakland-19 | 24.5 | 4.0 | 28.5 | 8.0 | 30.5 | 11.5 | 31.0 | 12.0 | 31.5 | 13.0 | 32.0 | 13.5 | 32.5 | 14.0 | | | | | | |
| Pittsburgh-5 | 35.5 | 13.5 | 39.5 | 17.5 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | 29.0 | 7.5 | 33.0 | 12.0 | 36.5 | 16. |
| Pittsburgh-10 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | 29.0 | 10.0 | 33.0 | 14.0 | 36.5 | 17. |
| St. Louis-32 | 34.5 | 14.0 | 38.5 | 18.0 | 40.5 | 21.5 | 41.0 | 22.0 | 41.5 | 23.0 | 42.0 | 23.5 | 42.5 | 24.0 | | | | | | |
| Sharon-90 | 35.5 | 14.0 | 39.5 | 18.0 | 41.5 | 21.0 | 42.0 | 21.5 | 42.5 | 22.0 | 43.0 | 22.5 | 43.5 | 23.0 | | | | | | |
| Pittsburgh-88 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | 29.0 | | 33.0 | | 36.5 | |
| Wheeling-15 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | | | | | | |
| Wheatland-89 | 35.5 | 13.5 | 39.5 | 17.5 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | | | | | | |
| Youngstown-6 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 26.0 | 29.0 | 10.0 | 33.0 | 14.0 | 36.5 | 17. |

Galvanized discounts based on zinc at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes by 1¢ or more.

Threads only, buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3½ pts. higher discount. Buttweld jobbers' discount, 5 pct.



UNIVERSITY OF MICHIGAN LIBRARIES

## WAREHOUSES

Base price, f.o.b., dollars per 100 lb. *(Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢).

| Cities | Sheets | | | Strip | | Plates | Shapes | Bars | | Alloy Bars | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hot-Rolled | Cold-Rolled (15 gage) | Galvanized (10 gage) | Hot-Rolled | Cold-Rolled | | Standard Structural | Hot-Rolled | Cold-Finished | Hot-Rolled A 4615 As rolled | Hot-Rolled A 4140 Annealed | Cold-Drawn A 4615 As rolled | Cold-Drawn A 4140 Annealed |
| Baltimore | 5.60 | 6.84 | 7.49[2]–8.07 | 6.04 | ..... | 5.80 | 6.14 | 6.04 | 6.84–6.89 | 10.24 | 10.54 | 11.89 | 12.19 |
| Birmingham* | 5.60 | 6.40 | 6.75 | 5.55 | ..... | 5.95 | 5.70 | 5.55 | ..... | ..... | ..... | ..... | ..... |
| Boston | 6.20 | 7.00–7.25 | 7.74–8.29 | 6.15 | 8.50[4] | 6.48–6.78 | 6.20 | 6.06 | 6.79–6.84 | 10.25 | 10.55 | 11.90–12.00 | 12.20–12.30 |
| Buffalo | 5.60 | 6.40 | 7.74–8.09 | 5.86 | ..... | 6.05 | 5.80 | 5.80 | 6.40–6.45 | 10.15–10.85 | 10.45 | 11.80 | 11.95–12.10 |
| Chicago | 5.60 | 6.40 | 7.75 | 5.55 | ..... | 5.80 | 5.70 | 5.55 | 6.30 | 9.80 | 10.10 | 11.45 | 11.75 |
| Cincinnati* | 5.87 | 6.44 | 7.39 | 5.80 | ..... | 6.19 | 6.09 | 5.80 | 6.61 | 10.15 | 10.45 | 11.80 | 12.10 |
| Cleveland | 5.60 | 6.40 | 8.10 | 5.80 | 8.90 | 5.92 | 5.82 | 5.57 | 6.40 | 9.91 | 10.21 | 11.56 | 11.86 |
| Detroit | 5.78 | 6.53 | 7.89 | 5.94 | ..... | 5.99 | 6.09 | 5.84 | 6.56 | 10.11 | 10.41 | 11.76 | 12.06 |
| Houston | 7.00 | 8.25 | ..... | ..... | ..... | 6.85 | 6.50 | 6.65 | 9.35 | 10.35 | 11.25 | ..... | 12.75 |
| Indianapolis, del'd. | 6.00 | 6.80 | 8.15 | 5.95 | ..... | 6.20 | 6.10 | 5.95 | 6.80 | ..... | ..... | ..... | ..... |
| Kansas City | 6.00 | 6.80 | 7.45 | 6.15 | 7.50 | 6.40 | 6.30 | 6.15 | 7.00 | 10.40 | 10.70 | 12.05 | 12.35 |
| Los Angeles | 6.35 | 7.90 | 8.85 | 6.40 | 9.45[4] | 6.40 | 6.35 | 6.35 | 8.20 | 11.30 | 11.30 | 13.20 | 13.50 |
| Memphis* | 6.33–6.38 | 7.08–7.18 | ..... | 6.33–6.38 | ..... | 6.43–8.02 | 6.33–6.48 | 6.08–6.33 | 7.16–7.32 | ..... | ..... | ..... | ..... |
| Milwaukee | 5.74 | 6.54 | 7.89 | 5.69–6.59 | ..... | 5.94 | 5.84 | 5.69 | 6.44–6.54 | 9.94 | 10.24 | 11.59 | 11.89 |
| New Orleans* | 5.70 | 6.59 | ..... | 5.75 | 7.25 | 5.95 | 5.75 | 5.75 | 7.30 | ..... | ..... | ..... | ..... |
| New York* | 5.67–5.97 | 7.19[3]–7.24[1] | 8.14[2] | 6.29–6.49 | 8.63[4] | 6.28–6.58 | 6.10 | 6.12 | 6.99 | 10.05–10.15 | 10.35–10.45 | 11.70–11.80 | 12.10–12.20 |
| Norfolk | 6.50[3] | ..... | ..... | ..... | ..... | 6.50[3] | 6.60[3] | 6.55[3] | ..... | ..... | ..... | ..... | ..... |
| Philadelphia* | 5.90 | 6.80 | 8.00 | 6.10 | ..... | 6.05 | 5.90 | 6.05 | 6.88 | 9.90 | 10.20 | ..... | ..... |
| Pittsburgh | 5.60 | 6.40 | 7.75 | 5.65–5.95 | ..... | 5.75 | 5.70 | 5.55 | 6.15 | 9.80 | 10.10 | 11.45 | 11.75 |
| Portland | 6.60–7.65 | 8.95 | 8.50–9.10 | 7.30 | ..... | 6.80 | 6.95 | 6.90 | ..... | ..... | 12.15 | ..... | ..... |
| Salt Lake City | 7.95 | ..... | 9.70–10.50[2] | 8.70–8.75 | ..... | 8.05 | 6.75–8.30 | 7.95–8.65 | 9.00 | ..... | ..... | ..... | ..... |
| San Francisco* | 6.65 | 8.05[2] | 8.55–8.90[2] | 6.60 | 9.95[4] | 6.50 | 6.45 | 6.45 | 8.20 | 11.30 | 11.30 | 13.20 | 13.26–13.50 |
| Seattle | 7.05 | 8.60 | 9.20 | 9.05 | ..... | 6.75 | 6.65 | 6.75 | 9.05 | ..... | ..... | ..... | ..... |
| St. Louis | 5.80–5.85 | 6.65 | 8.00 | 5.80 | 8.00[4]–8.28 | 6.13 | 6.03 | 5.80 | 6.55–6.65 | 10.05 | 10.35 | 11.70 | 12.00 |
| St. Paul* | 6.16 | 6.96 | 8.31 | 6.11 | ..... | 6.36 | 6.26 | 6.11 | 6.96 | 10.36 | 10.66 | 12.01 | 12.31 |

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 9999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.
EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2000 to 9999 lb.

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

| Producing Point | Basic | Foundry | Malleable | Bessemer | Low Phos. | Blast Furnace Silvery | Low Phos. Charcoal |
|---|---|---|---|---|---|---|---|
| Bethlehem-3 | 54.00 | 54.50 | 55.00 | 55.50 | ..... | ..... | ..... |
| Birmingham-4 | 48.38 | 48.88 | ..... | ..... | ..... | ..... | ..... |
| Birmingham-91 | 48.38 | 48.88 | ..... | ..... | ..... | ..... | ..... |
| Birmingham-92 | 48.38 | 48.88 | ..... | ..... | ..... | ..... | ..... |
| Buffalo-4 | 52.00 | 52.50 | 53.00 | ..... | ..... | ..... | ..... |
| Buffalo-93 | 52.00 | 52.50 | 53.00 | ..... | ..... | 63.75 | ..... |
| Chicago-94 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Cleveland-2 | 52.00 | 52.50 | 52.50 | 53.00 | 57.00 | ..... | ..... |
| Cleveland-4 | 52.00 | 52.50 | 52.50 | ..... | ..... | ..... | ..... |
| Daingerfield, Tex.-95 | 48.00 | 48.50 | 48.50 | ..... | ..... | ..... | ..... |
| Duluth-94 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Erie-94 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Everett, Mass.-96 | ..... | 55.25 | 55.75 | ..... | ..... | ..... | ..... |
| Fontana-19 | 58.00 | 58.50 | ..... | ..... | ..... | ..... | ..... |
| Geneva, Utah-16 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Granite City, Ill.-102 | 53.90 | 54.40 | 54.90 | ..... | ..... | ..... | ..... |
| Hubbard, Ohio-6 | 52.00 | 52.50 | 52.50 | ..... | ..... | ..... | ..... |
| Ironton, Utah-16 | 52.00 | 52.50 | ..... | ..... | ..... | ..... | ..... |
| Jackson, Ohio-97, 98 | ..... | ..... | ..... | ..... | ..... | 62.50 | ..... |
| Kyle, Tenn.-101 | ..... | ..... | ..... | ..... | ..... | ..... | 66.00 |
| Monessen-18 | 54.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| Neville Island-99 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Pittsburgh-1 | 52.00 | ..... | ..... | 53.00 | ..... | ..... | ..... |
| Sharpsville-100 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Steelton-3 | 54.00 | 54.50 | 55.00 | 55.50 | 60.00 | ..... | ..... |
| Swedeland-26 | 56.00 | 56.50 | 57.00 | 57.50 | ..... | ..... | ..... |
| Toledo-94 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| Troy, N. Y.-4 | 54.00 | 54.50 | 55.00 | ..... | 60.00 | ..... | ..... |
| Youngstown-8, N. Tonawanda, N. Y.-105 | 52.00 | 52.50 | 52.50 | 53.00 | ..... | ..... | ..... |
| | | 52.50 | 53.00 | | | | |

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct, except low phos. 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

## REFRACTORIES

**Fire Clay Brick** *(F.o.b. works, Carloads, Per 1000*

| | |
|---|---|
| First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) | $94.60 |
| No. 1 Ohio | 88.00 |
| Sec. quality, Pa., Md., Ky., Mo., Ill. | 88.00 |
| No. 2 Ohio | 79.20 |
| Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) | 13.75 |

**Silica Brick**

| | |
|---|---|
| Mt. Union, Pa., Ensley, Ala. | $94.60 |
| Childs, Pa. | 99.00 |
| Hays, Pa. | 100.10 |
| Chicago District | 104.50 |
| Western Utah and Calif. | 111.10 |
| Super Duty, Hays, Pa., Athens, Tex., Chicago | 111.10 |
| Silica cement, net ton, bulk, Eastern (except Hays, Pa.) | 16.50 |
| Silica cement, net ton, bulk, Hays, Pa. | 18.70 |
| Silica cement, net ton, bulk, Ensley, Ala. | 17.60 |
| Silica cement, net ton, bulk, Chicago District | 17.60 |
| Silica cement, net ton, bulk, Utah and Calif. | 24.70 |

**Chrome Brick** *Per Net Ton*

| | |
|---|---|
| Standard chemically bonded, Balt., Chester | $82.00 |

**Magnesite Brick**

| | |
|---|---|
| Standard, Baltimore | $104.00 |
| Chemically bonded, Baltimore | 93.00 |

**Grain Magnesite** *St. ⅜-in. grains*

| | |
|---|---|
| Domestic, f.o.b. Baltimore, in bulk fines removed | $62.70 |
| Domestic, f.o.b. Chewelah, Wash., in bulk | 36.30 |
| in sacks | 41.80 |

**Dead Burned Dolomite**

| | |
|---|---|
| F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ | $13.00 |

## COKE

| | Net Ton |
|---|---|
| Furnace, beehive (f.o.b. oven) Connellsville, Pa. | $14.50 to $15.00 |
| Foundry, beehive (f.o.b. oven) Connellsville, Pa. | $17.50 to $18.00 |
| Foundry, oven coke | |
| Buffalo, del'd | $26.69 |
| Chicago, f.o.b. | 23.00 |
| Detroit, f.o.b. | 24.00 |
| New England, del'd | 24.80 |
| Seaboard, N. J., f.o.b. | 22.75 |
| Philadelphia, f.o.b. | 22.70 |
| Swedeland, Pa., f.o.b. | 22.60 |
| Painesville, Ohio, f.o.b. | 24.00 |
| Erie, Pa., f.o.b. | 23.50 |
| Cleveland, del'd | 25.72 |
| Cincinnati, del'd | 25.06 |
| St. Paul, f.o.b. | 22.50 |
| St. Louis | 25.40 |
| Birmingham, del'd | 21.69 |
| Neville Island | 23.00 |

## LAKE SUPERIOR ORES

*(51.50% Fe; natural content, delivered lower lake ports)* *Per gross ton*

| | |
|---|---|
| Old range, bessemer | $8.70 |
| Old range, nonbessemer | 8.55 |
| Mesabi, bessemer | 8.45 |
| Mesabi, nonbessemer | 8.30 |
| High phosphorus | 8.30 |

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

## C-R SPRING STEEL

| F.o.b. Mill Cents Per Lb. | CARBON CONTENT | | | | |
|---|---|---|---|---|---|
| | 0.26–0.40 | 0.41–0.60 | 0.61–0.80 | 0.81–1.05 | 1.06–1.35 |
| Bridgeport, Conn.-58 | 5.35 | 6.80 | 7.40 | 9.35 | 11.65 |
| Carnegie, Pa.-41 | ..... | 6.80 | 7.40 | 9.35 | 11.65 |
| Cleveland-2 | 4.65 | 6.45 | 7.40 | 9.35 | 11.65 |
| Detroit-68 | 5.60 | 6.65 | 7.25 | ..... | ..... |
| New Castle, Pa.-40 | 5.35 | 6.80 | 7.40 | 9.35 | ..... |
| New Haven, Conn.-68 | 5.65 | 6.75 | 7.35 | ..... | ..... |
| Sharon, Pa.-13 | 5.35 | 6.80 | 7.40 | 9.35 | 11.65 |
| Weirton, W. Va.-9 | 5.35 | 6.80 | 7.40 | 9.35 | 11.65 |
| Worcester, Mass.-2 | 4.95 | 6.75 | 7.70 | 9.65 | 11.65 |
| Youngstown-48 | ..... | 6.80 | 7.40 | 9.35 | 11.65 |

UNIVERSITY OF MICHIGAN LIBRARIES

## BOLTS, NUTS, RIVETS, SCREWS

### Consumer Prices

*(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)*

**Machine and Carriage Bolts**

| | Pct Off List Less Case | C. |
|---|---|---|
| ½ in. & smaller x 6 in. & shorter | 15 | 28½ |
| 9/16 in. & ⅝ in. x 6 in. & shorter | 18½ | 30½ |
| ¾ in. & larger x 6 in. & shorter | 17½ | 29½ |
| All diam. longer than 6 in. | 14 | 27½ |
| Lag, all diam. x 6 in. & shorter | 23 | 35 |
| Lag, all diam. longer than 6 in. | 21 | 33 |
| Plow bolts | 34 | .... |

**Nuts, Hot Pressed, Cold Punched—Sq**

| | Pct Off List Less Keg (Reg.) | K. | Less Keg (Hvy.) | K. |
|---|---|---|---|---|
| ½ in. & smaller. | 15 | 28½ | 15 | 28½ |
| 9/16. in. & ⅝ in.. | 12 | 25 | 6½ | 21 |
| ¾ in. to 1½ in. inclusive ..... | 9 | 23 | 1 | 16½ |
| 1⅝ in. & larger. | 7½ | 22 | 1 | 16½ |

**Nuts, Hot Pressed—Hexagon**

| | | | | |
|---|---|---|---|---|
| ½ in. & smaller. | 26 | 37 | 22 | 34 |
| 9/16 in. & ⅝ in.. | 16½ | 29½ | 6½ | 21 |
| ¾ in. to 1½ in. inclusive ..... | 12 | 25 | 2 | 17½ |
| 1⅝ in. & larger. | 8½ | 23 | 2 | 17½ |

**Nuts, Cold Punched—Hexagon**

| | | | | |
|---|---|---|---|---|
| ½ in. & smaller. | 26 | 37 | 22 | 34 |
| 9/16 in. & ⅝ in.. | 23 | 35 | 17½ | 30½ |
| ¾ in. to 1½ in. inclusive ..... | 19½ | 31½ | 12 | 25 |
| 1⅝ in. & larger. | 12 | 25 | 6½ | 21 |

**Nuts, Semi-Finished—Hexagon**

| | Reg. | | Hvy. | |
|---|---|---|---|---|
| ½ in. & smaller. | 35 | 45 | 28½ | 39½ |
| 9/16 in. & ⅝ in.. | 29½ | 40½ | 22 | 34 |
| ¾ in. to 1½ in. inclusive ..... | 24 | 36 | 15 | 28½ |
| 1⅝ in. & larger. | 13 | 26 | 8½ | 23 |

| | Light | |
|---|---|---|
| 7/16 in. & smaller | 35 | 45 |
| ½ in. thru ⅝ in. | 28½ | 39½ |
| ¾ in. to 1½ in. inclusive ..... | 26 | 37 |

**Stove Bolts** — *Pct Off List*

| | |
|---|---|
| Packaged, steel, plain finished | 48—10 |
| Packaged, plated finish | 31—10 |
| Bulk, plain finish** | 62* |

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

**Rivets** — *Base per 100 lb.*

| | |
|---|---|
| ½ in. & larger | $7.85 |
| *Pct Off List* | |
| 7/16 in. & smaller | 36 |

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.

**Cap and Set Screws**

| *(In bulk)* — *Pct Off List* | |
|---|---|
| Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright | 54 |
| ¾ in. thru 1 in. up to & including 6 in. | 48 |
| ¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat | 46 |
| ¾ in. thru 1 in. up to & including 6 in. | 41 |
| Milled studs | 35 |
| Flat head cap screws, listed sizes | 16 |
| Fillister head cap, listed sizes | 34 |
| Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. & shorter | 53 |

**S. M. Ferrochrome**

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

| | |
|---|---|
| Carloads | 21.60 |
| Ton lots | 23.75 |
| Less ton lots | 25.25 |

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

| | |
|---|---|
| Carloads | 27.75 |
| Ton lots | 30.05 |
| Less ton lots | 31.85 |

## ELECTRODES

*Cents per lb., f.o.b. plant threaded electrodes with nipples, unboxed*

| Diam. in in. | Length in in. | Cents Per lb. |
|---|---|---|
| | GRAPHITE | |
| 17, 18, 20 | 60, 72 | 17.85 |
| 8 to 16 | 48, 60, 72 | 17.85 |
| 7 | 48, 60 | 19.57 |
| 6 | 48, 60 | 20.95 |
| 4, 5 | 40 | 21.50 |
| 3 | 40 | 22.61 |
| 2½ | 24, 30 | 23.15 |
| 2 | 24, 30 | 25.36 |
| | CARBON | |
| 40 | 100, 110 | 8.03 |
| 35 | 65, 110 | 8.03 |
| 30 | 65, 84, 110 | 8.03 |
| 24 | 72 to 104 | 8.03 |
| 20 | 84, 90 | 8.03 |
| 17 | 60, 72 | 8.03 |
| 14 | 60, 72 | 8.57 |
| 10, 12 | 60 | 8.84 |
| 8 | 60 | 9.10 |

## CLAD STEEL

*Base prices, cents per pound, f.o.b. mill*

| Stainless-carbon | Plate | Sheet |
|---|---|---|
| No. 304, 20 pct. | | |
| Coatesville, Pa. (21) | *29.5 | |
| Washgtn, Pa. (39) | *29.5 | |
| Claymont, Del. (29) | *28.00 | |
| Conshohocken, Pa. (26) | | *27.50 |
| New Castle, Ind. (55) | *26.50 | *25.50 |
| Nickel-carbon | | |
| 10 pct Coatesville (21) | 32.5 | |
| Inconel-carbon | | |
| 10 pct Coatesville (21) | 40.5 | |
| Monel-carbon | | |
| 10 pct Coatesville (21) | 33.5 | |
| No. 302 Stainless-copper stainless, Carnegie, Pa. (60) | | 77.00 |
| Aluminized steel sheets, hot dip, Butler, Pa. (7) | | 7.75 |

*Includes annealing and pickling, or sandblasting.

## TOOL STEEL

*F.o.b. mill*

| W | Cr | V | Mo | Co | Base per lb |
|---|---|---|---|---|---|
| 18 | 4 | 1 | — | — | $1.505 |
| 18 | 4 | 1 | — | 5 | $2.13 |
| 18 | 4 | 2 | — | — | $1.65 |
| 1.5 | 4 | 1.5 | 8 | — | 81.0¢ |
| 6 | 4 | 2 | 6 | — | 96.5¢ |

| | |
|---|---|
| High-carbon chromium | 63.5¢ |
| Oil hardened manganese | 35¢ |
| Special carbon | 32.5¢ |
| Extra carbon | 27¢ |
| Regular carbon | 23¢ |

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

## METAL POWDERS

*Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.*

| | |
|---|---|
| Swedish sponge iron c.i.f. New York, ocean bags | 7.4¢ to 9.0¢ |
| Canadian sponge iron, del'd In East | 10.00¢ |
| Domestic sponge iron, 98+% Fe, carload lots | 15.5¢ to 17.0¢ |
| Electrolytic iron, annealed, 99.5+% Fe | 42.5¢ |
| Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe | 53.5¢ |
| Hydrogen reduced iron, minus 300 mesh, 98+% Fe | 63.0¢ to 80.0¢ |
| Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe | 83.0¢ to $1.48 |
| Aluminum | 31.5¢ |
| Brass, 10 ton lots | 30.00¢ to 33.25¢ |
| Copper, electrolytic | 10.75¢ plus metal value |
| Copper, reduced | 10.00¢ plus metal value |
| Cadmium, 100-199 lb | 95¢ plus metal value |
| Chromium, electrolytic, 99% min., and quantity, del'd | $3.50 |
| Lead | 7.5¢ to 12.0¢ plus metal value |
| Manganese | 57.0¢ |
| Molybdenum, 99% | $2.75 |
| Nickel, unannealed | 88.0¢ |
| Nickel, annealed | 95.0¢ |
| Nickel, spherical, unannealed | 92.0¢ |
| Silicon | 38.5¢ |
| Solder powder | 7.0¢ to 9.0¢ plus met. value |
| Stainless steel, 302 | 83.00¢ |
| Stainless steel, 316 | $1.10 |
| Tin | 14.00¢ plus metal value |
| Tungsten, 99% (65 mesh) | $6.00 |
| Zinc, 10 ton lots | 23.0¢ to 30.5¢ |

## ELECTRICAL SHEETS

22 Ga. H-R cut lengths

| F.o.b. Mill Cents Per Lb. | Armature | Elec. | Motor | Dynamo | Transf. 72 | Transf. 65 | Transf. 58 |
|---|---|---|---|---|---|---|---|
| Beech-Bottom-15 | .... | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Brackenridge-28 | .... | 7.25 | 8.50 | 9.30 | 9.85 | .... | .... |
| Follansbee-83 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Granity City-22 | .... | 7.95 | 9.20 | .... | .... | .... | .... |
| Ind. Harbor-3 | 6.75 | 7.25 | .... | .... | .... | .... | .... |
| Mansfield-75 | 7.25 | 7.75 | 9.00 | 9.80 | .... | .... | .... |
| Niles, O.-64 | 7.05 | 7.55 | .... | .... | .... | .... | .... |
| Vandergrift-1 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Warren, O.-4 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Zanesville-7 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |

**Ferrochrome**

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si.)

| | | | |
|---|---|---|---|
| 0.06% C | 30.50 | 0.20% C | 29.50 |
| 0.10% C | 30.00 | 0.50% C | 29.25 |
| 0.15% C | 29.75 | 1.00% C | 29.00 |
| 2.00% C | | | 28.75 |
| 65-69% Cr, 4-9% C | | | 32.00 |
| 62-66% Cr, 4-6% C, 6-9% Si. | | | 33.00 |

**Foundry Ferrochrome**

Contract prices, cents per lb of alloy. Noncontract prices add 2.50¢ per lb.

High carbon 8 Mesh and down.

62 to 66% Cr, 5 to 7% C, 7 to 10% Si.

| | |
|---|---|
| Carloads, bulk | 23.25 |
| Carloads, packed | 24.15 |
| Ton lots, packed | 27.25 |

**High-Nitrogen Ferrochrome**

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

**Chromium Metal**

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

| | |
|---|---|
| 0.10% max. C. | $1.14 |
| 0.50% max. C. | 1.10 |
| 9 to 11% C. | 1.08 |

**Low Carbon Ferrochrome Silicon**

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

**Calcium-Silicon**

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

| | |
|---|---|
| Carloads | 19.00 |
| Ton lots | 22.10 |
| Less ton lots | 23.60 |

**Calcium-Manganese—Silicon**

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

| | |
|---|---|
| Carloads | 13.00 |
| Ton lots | 13.80 |
| Less ton lots | 13.80 |

**V Foundry Alloy**

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

| | |
|---|---|
| Ton lots | 16.50 |
| Less ton lots | 17.75 |

**Graphidox No. 4**

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

| | |
|---|---|
| Carload packed | 18.00 |
| Ton lots to carload packed | 19.00 |
| Less ton lots | 20.50 |

**SMZ**

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

| | |
|---|---|
| Ton lots | 17.50 |
| Less ton lots | 18.50 |

## FERROALLOYS

### Ferromanganese

76-82% Mn. maximum contract base price, gross ton, lump size.

| | |
|---|---|
| F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont., Ashtabula, O. | $185 |
| F.o.b. Johnstown, Pa. | $187 |
| F.o.b. Sheridan, Pa. | $185 |
| F.o.b. Etna, Clairton, Pa. | $188 |

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%. Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

| | |
|---|---|
| Carload, bulk | 10.95 |
| Ton lots | 12.55 |

### Spiegeleisen

Contract prices gross ton, lump, f.o.b.

| | 16-19% Mn 3% max. Si | 19-21% Mn 3% max. Si |
|---|---|---|
| Palmerton, Pa. | $74.00 | $75.00 |
| Pgh. or Chicago | 75.00 | 76.00 |

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn. 0.2% max. C. 1% max. Si, 2.5% max. Fe.

| | |
|---|---|
| Carload, packed | 34.75 |
| Ton lots | 36.25 |

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

| | |
|---|---|
| Carloads | 28 |
| Ton lots | 30 |
| Less ton lots | 32 |

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn ..... 19.15¢

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

| | Cast | Turnings | Distilled |
|---|---|---|---|
| Ton lots | $2.05 | $2.95 | $3.75 |
| Less ton lots | 2.40 | 3.30 | 4.55 |

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

| | |
|---|---|
| Carload bulk | 9.90 |
| Ton lots | 11.55 |
| Briquet, contract basis carlots, bulk delivered, per lb of briquet | 11.15 |
| Ton lots | 12.75 |

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $90.00. **Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.**

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

| | |
|---|---|
| 96% Si, 2% Fe | 21.70 |
| 97% Si, 1% Fe | 22.10 |

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

| | |
|---|---|
| Carload, bulk | 6.95 |
| Ton lots | 8.55 |

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

| | | | |
|---|---|---|---|
| 25% Si | 20.00 | 75% Si | 14.30 |
| 50% Si | 12.40 | 85% Si | 15.55 |
| 90-95% Si | | | 17.50 |

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd, Mn 85-90%.

| | Carloads | Ton | Less |
|---|---|---|---|
| 0.75% max. C, 0.06% P, 90% Mn | 26.25 | 28.10 | 29.30 |
| 0.07% max. C | 25.75 | 27.60 | 28.80 |
| 0.15% max. C | 25.25 | 27.10 | 28.30 |
| 0.30% max. C | 24.75 | 26.60 | 27.80 |
| 0.50% max. C | 24.25 | 26.10 | 27.30 |
| 0.75% max. C, 7.00% max. Si | 21.25 | 23.10 | 24.30 |

### Other Ferroalloys

| | |
|---|---|
| **Alsifer, 20%, Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.** | |
| Carload | 9.90¢ |
| Ton lots | 11.30¢ |
| **Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo.** | $1.15 |
| **Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.** | |
| Ton lots | $4.90 |
| Less ton lots | 4.95 |
| **Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta** | $3.75 |
| **Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.** | $1.32 |
| **Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton** | $65.00 |
| 10 tons to less carload | 75.00 |
| **Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa. freight allowed, ton lots, per lb contained Ti** | $1.35 |
| **Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti** | $1.50 |
| Less ton lots | 1.55 |
| **Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton** | $177.00 |
| **Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered** | $5.00 |
| **Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.** | |
| Openhearth | $3.00-$3.10 |
| Crucible | 3.10- 3.20 |
| High speed steel (Primos) | 3.20- 3.25 |
| **Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b Langeloth, Pa.** | $1.14 |
| bags, f.o.b. Washington, Pa., Langeloth, Pa. | $1.13 |
| **Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound** | |
| Carload, bulk lump | 14.50¢ |
| Ton lots, bulk lump | 15.75¢ |
| Less ton lots, lump | 16.25¢ |
| **Vanadium pentoxide, 86 to 89% $V_2O_5$ contract basis, per pound contained $V_2O_5$** | $1.28 |
| **Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.** | |
| Ton lots | 21.00¢ |
| **Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.** | |
| Carload, bulk | 7.90¢ |

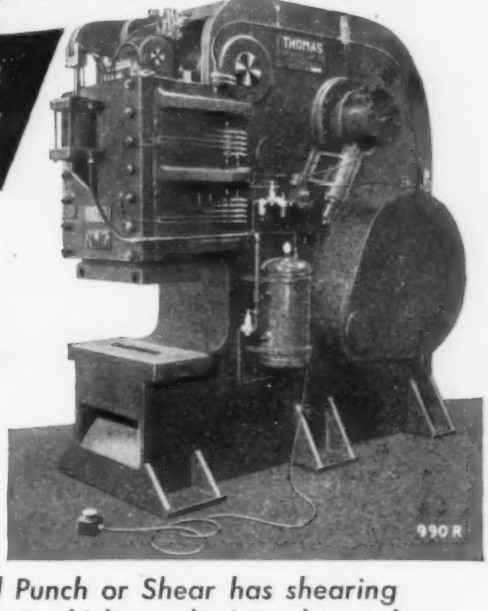
### Boron Agents

Contract prices per lb of alloy, del.

| | |
|---|---|
| **Borosil, f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B** | $5.25 |
| **Bortam, f.o.b. Niagara Falls** | |
| Ton lots, per pound | 45¢ |
| Less ton lots, per pound | 50¢ |
| **Carbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.** | |
| Ton lots, per pound | 10.00¢ |
| **Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots** | $1.20 |
| F.o.b. Wash., Pa.; 100 lb up | |
| 10 to 14% B | .85 |
| 14 to 19% B | 1.20 |
| 19% min. B | 1.50 |
| **Grainal, f.o.b Bridgeville, Pa., freight allowed, 100 lb and over.** | |
| No. 1 | $1.00 |
| No. 6 | 68¢ |
| No. 79 | 50¢ |
| **Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd** | |
| Ton lots | $1.46 |
| Less ton lots | 1.57 |
| **Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.** | |
| Less ton lots | $1.80 |
| **Silcaz, contract basis, delivered.** | |
| Ton lots | 45.00¢ |


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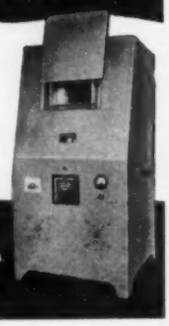
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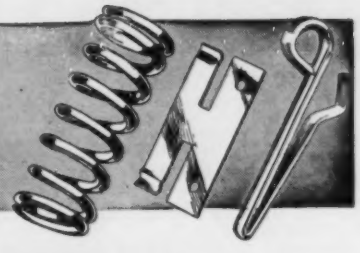
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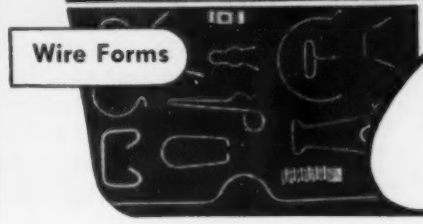
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# The Clearing House

**NEWS OF USED, REBUILT AND SURPLUS MACHINER**

**Pricing Order?**—OPS' granting an amendment to CPR 30 (new machines) permitting new machine tool builders to increase base period prices and tack on other costs may be the stepping stone to issuance of a specially tailored pricing order for the used machinery field. The regulation for the used field has been held in abeyance first because of a controversy on pricing by weight and later by delaying of price relief for new builders.

OPS carelessly maintains that the used field is covered by the original pricing order, GCPR, but that order is difficult to apply to the trade. In a field where there was dickering over prices, fluctuations of prices from one dealer to another, application of GCPR would lead to enormous confusion. Dealers have been bewildered by OPS' lack of understanding.

**Withholds Machinery**—THE IRON AGE last week came upon an instance where pricing ambiguities in the used field are working against it. A large corporation with some heavy machinery used in sugar refining was hesitant to sell because it felt that the used machinery trade did not have hard and fast pricing controls.

The corporation was on the verge of deciding to hold back its machines, preferring this to leaving itself open to possible vulnerability as an OPS code violator.

**A Brisk Fall**—The used field in Pittsburgh is looking forward to an active fall and winter. They see no reason for business to slacken as long as the defense program is building up. One dealer here reports that, while inquiries continue heavy, actual inspections by prospects have fallen off.

He cited a recent experience of two steel companies which were in the market for a shear that he could provide. For no apparent reason, neither of the inquirers closed the deal.

**Easing Off**—The Pittsburg electrical equipment field has fe business ease off in the last se eral weeks. Slowing up of co mine operations is partially re sponsible.

A specialist in disposing equipment from a standing pla reports that activity is beginnin to pick up after a slow July.

Recently he disposed of mo than 100 machines from a distri plant now being modernized an expanded. Gross take from th sale of machine tools and stru tural equipment was in the neig borhood of $40,000.

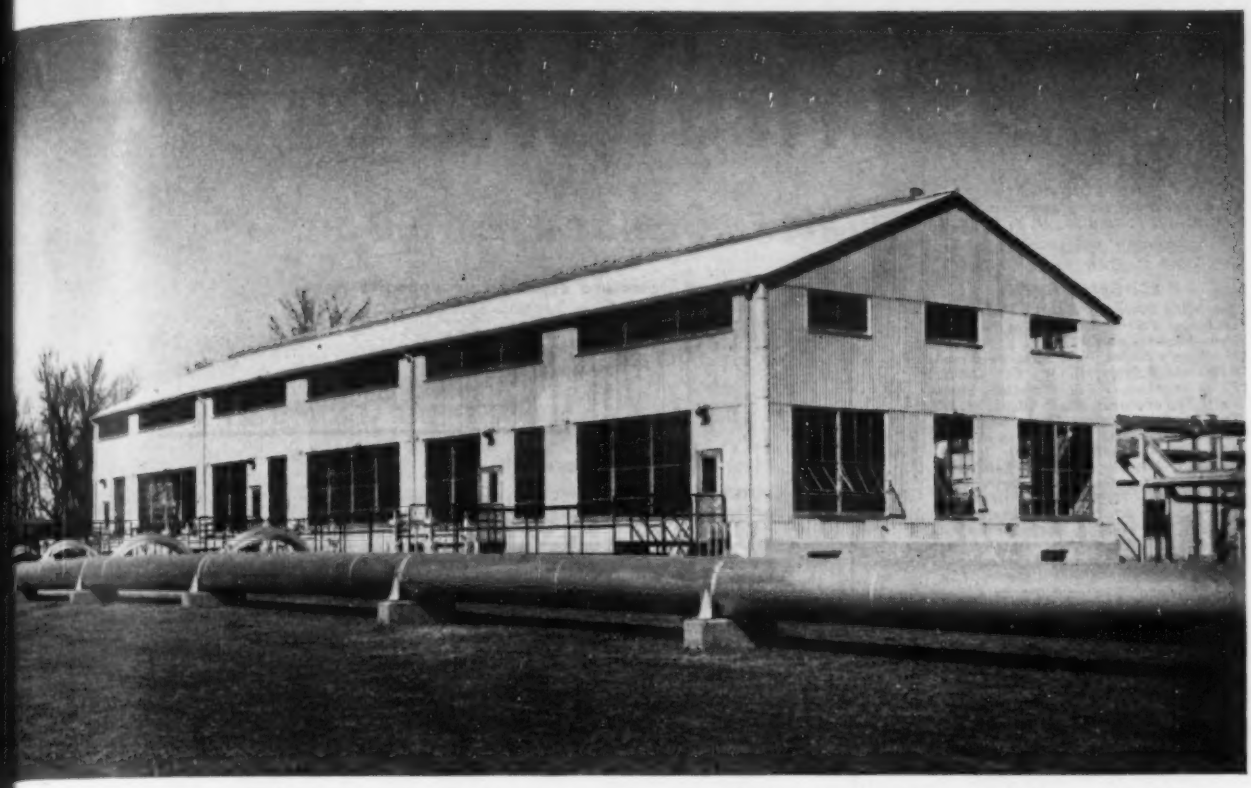
**Old Stuff Moves**—In Clevelan despite the spotlight of dema on late model equipment, o dealer has been able to sell so of his older models such as hea horizontal and vertical borin mills. His rebuilding program lagging 6 to 8 weeks but he se himself catching up shortly.

Rebuilders in the Clevela area are working principally government stockpile reser tools. In most cases overhaul wo is not extensive except where ne attachments must be added for sp cialized production.

Replacement parts for lat models are giving dealers the mo trouble. One Cleveland dealer re ported that stamping machine demand had sharpened and he so a 30-year-old Bliss press.

**Not Critical**—Rebuilders in th Cleveland area admit that the labor situation is not critic Finding replacement parts ha shaped up into more of a proble than labor.

One dealer summed up the lab situation thusly: Usually rebuil ers employ the type of man w enjoys working for a small co pany. He has been with the fi for a long time, is recognized an individual rather than a cog a huge assembly line, likes t different problems that pres themselves daily. Defense wo doesn't dislodge him easily.



Pipe ranging from 24 in. to 30 in. in diameter was fabricated from ½ in. and ¾ in. Mayari R plate, for use in the Transcontinental Gas Pipe Line that connects the gas fields of West Texas with New York. This pipe was used at 12 different pumping stations along the line. Fish Engineering Corporation and Fish Constructors, Incorporated, handled the design, engineering and construction of the line.

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